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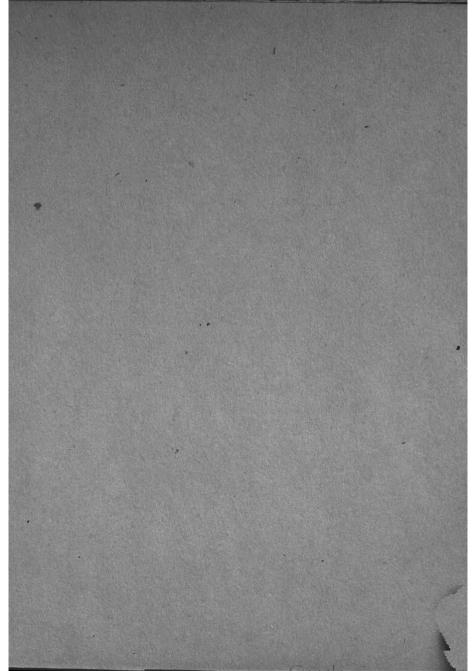
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DRILL CHIPS FOR JANUARY



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Drill Chips



January 1915



The Cleveland Twist Drill Co

Andrew Eadie, Editor

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Coope

ONG ago there was a primitive man, and, of course, he was wandering thru the woods. To have been wandering, for instance, on the boulevards would have been considered highly reactionary and we would have promptly set him down as a ocialist or something dreadful instead of living him this free reading notice. Well, te wandered thither and you until he ame—oh! quite unexpectedly—upon a airy reclining in a graceful posture against want column of The Fairyland Tattler. Dropping the conventions, as they someimes do, the fairy, in her most dulcet ones, spake thus: "Make three wishes nd they shall be granted you."

This was quite a departure from the rthodox opener, but primitive man quickly scovered and having been up against it seval times in his checkered career, wished or warmth in winter, covering from the rain and sun and means to cross the water so at he could see what nefarious business to other half of the world was up to.

Pyright 1914, by The Cleveland Twist Drill Co. 2.

An ordinary fairy might have hesitated about accepting this order, pleading no responsibility for causes beyond her control. Our heroine, however, smiled engagingly, frisked the folds of her Paquin 1915 model and extracted an acorn which she gave him without hope of future reward. Then she evaporated, leaving primitive man much annoyed that he had not signed her up in his date book.

He was not to be double-crossed by any such skulduggery as that, however. For, did he not know, kind friends, that all that would come of that acorn was another tree, similar to the thousands all around him? He did. So, winding up like Chief Bender, he shied the acorn at an itinerant squirrel and went his solemn way.

If there is any moral in this tale it is this: in the trees were all the things he had wished for, and in the acorn was the tree. If there is any lesson in this tale it is this: the much sought service and satisfaction, so necessary to efficiency and increased hole production, are to be found in "Cleveland" tools by all who are wise enough to use them.

Gadzooks, it was only an advertisement after all!

 $\blacksquare \lor \blacksquare$

Suggestion to newspapers, magazines, et al: To add a touch of piquant and pristine eccentricity, mention Sherman and his deathless definition of war.



It is a curious fact that in these days of strenuous selling and conspicuous competition, a great many knights of the grip take to the road with a hat full of weird ideas. Aforementioned ideas consisting mainly in the fatuous benefits attendant upon sitting up until 3 a. m., courting two small pairs, and hoping to fill. Also in following the musical comedies and good fellow frolics, and that they can sell goods by keeping a varied and extensive assortment of infected stories beneath their dandruff, for the clinching argument on the merit of the goods.

Verily, it is an eight day wonder how dreams of this kind can be built up around a cloud of cigarette smoke garnished by a little seltzer and

But it is far more wondrous to note the look of pained surprise stealing o'er the guileless and confiding countenance of Sir Knight when he goes out to do battle with the charged wires who are going to sell goods or bust.

There may have been times—ante belum, but now ad nauseam—when the good old bushy bunk sold the product but they have been relegated to the epochs of ancient history along with Rameses and the Bull



H. S. Taper Shank Drill

очен, от реализители — очен выполниции и выстранения выполниции выполниции выполниции выполниции выполниции в

Muse. Those golden days are the pastest things we know of and to sell goods today in this salesman's paradise ye traveling man must have his eye teeth cut and his keenness thrice daily gilletted.

For the modern buyer draws down his retainer gauged not by his ability to imbibe Sauternes or Martinis, but rather by certain astute and sagacious qualities undreamt of yesteryear. He must know a good buy from the canned stuff and be able to discern the spring needs of his trade before the snow flies, yet this in no wise inspires the Simple Simon of the Grip, and the wireless finds nobody home.

But at the other end sits Friend Sales Manager who is the interested party in the case and one fine day something drops in the immediate vicinity of the expense check and Simon is no more.

For, be it known, to keep the factory running and the business on a paying basis is one of the chief reasons for the Species Salesman. But for that, the Honorable Order would soon be extinct.

And where the boss puts it up to the sales manager to sell the goods there must be a hustling sales force in the offing to grease the skids, and while poker, pink tights, and ball games are all right in small doses—

To be the Star Salesman is something else again.

$\Delta \nabla \Delta$

Impressions are misleading, Like roses, they have thorns; For girls who wear the smallest shoes Can have the biggest corns.

C-T-D-Suggestion System

It may be remarked impersonally and without slanderous intent that no one has a corner on the brain market, kings and politicians excepted. Being singularly neglected by these divinities, we have found it expedient and profitable to maintain in our factory a sort of open forum where ideas and suggestions, for the betterment of our business, may be submitted and considered. Every employee is invited to suggest any change in existing methods, that to his mind will increase production, lessen the cost of the finished article, or make more convenient any operation. This shows our men that we regard them as living, thinking, human parts of our organization and not as so many cogs in an automatic machine.

To facilitate the working of our Suggestion System we have placed boxes in various departments, locker rooms and lavatories, where the letter or paper containing the idea may be dropped. Any employee, finding difficuly in expressing his idea or plan, has recourse to the office of the Assistant Superintendent, where the suggestion is drawn up to the satisfaction of all concerned. If, for any reason, the identity of the person submitting the idea is not to be revealed, that wish is properly respected.

To stimulate the interest in such a system and to keep our men thoroughly alive to the need for constant improvement, some financial, or other





substantial, recognition is essential. The value of the suggestion is determined by a committee composed of the President, Manager, and General Superintendent, but every man submitting an idea that is adopted, receives from \$1.00 to \$50.00 for his reward. Furthermore, there is no limit to the Suggestions that may be made by any employee and they may or may not relate to his own work.

22.30 (0.10) 0.00 (0.10) 0.00

During the years that this System has been in operation in our plant we have had many valuable ideas furnished and the plan is one we can heartily recommend, as it affects the welfare of employer and employee alike and is mutual in its benefits.

A V A

There seems to exist some misunderstanding respecting the function of a tang on a taper shank tool; also there are far too many tangs twisted off: all of which lends strength to our conviction that all is not as well as it should be. Therefore, let us explain that the tang exists merely to assist the taper shank in driving the tool. Under ideal conditions no tang would be necessary, as a perfect fit between the taper shank and the hole in the spindle would, in itself, give a sufficient drive. However, this fit in actual practice is seldom perfect, especially after the parts have undergone any amount of wear, and the tang is a most useful, if not necessary, auxiliary. When the parts are badly worn, or proper care has not been taken to keep the taper surfaces free from grit, the driving function of the taper fit is lost and an undue strain is thrown upon the tang. Is it any wonder that nine times out of ten the tang proves unequal to this additional burden and is twisted off?

Benediction

HE glad new year is now safely in our midst. We know it is glad because everybody has always said so. According to all known precepts, Hoyle, Work, and the Marquis of Queensbury, we should step up to the plate and deliver a few choice, altho frayed and tired, phrases of optimistic welcome. As part and parcel of the tattered prescription come the regulation and standardized New Year Resolutions. No new year is complete without them any more than the cartoon depicting the poverty-stricken home is complete without that broken patch of plaster on the wall. Then when the joyous birth rites are concluded we can return to our respective entrenchments, take the pledge, and with renewed vigor attend to old scores.

Since you have mentioned it—you didn't?—well, never mind—we are going to admit that ordinarily we look with askance and even worse things, at that platitudinous philosopher known as the professional optimist. There are lots of things we can't see good in; submarines, wrist watches, militants, parsnips, tan shoes with black uppers, and the two well-known Bills—Bryan and Payable. To habitually see good in all things seems to imply an amazing blindness, ignorance, or a slightly inclined axis with symptoms of flattening at the poles, as they used to say in the fifth reader. A blissful disregard of facts and a facility for skipping over unpleasant conditions doesn't in any way molest the reality of their existence. Not yetly.

Frexample, it always seemed to us that there is a good deal of potential virtue in discontent and dissatisfaction.





Shank Drill



OIL HOL

JUST recently we have supplemented here illustrated. The oil holes run the of the flutes and the lubricant is dedrill. This construction makes a very terrupted delivery of a large volume of line.

Far greater production is possible non-lubricating style and they are especial cases where the depth exceeds two diames

List Numbers Are Indic

THE CLEVELAN

NEW YORK



CARBON 200-A

TRADE

CLI



CARBON 205-

CARBON 99-A HIGH SPEED 429-A



E DRILLS

our line of oil feeding drills with the designs ough the solid metal conforming to the twist vered directly behind the cutting lips of the ong and durable drill, and allows the uninricant at any desired pressure.

with these oil hole drills than with the desirable for drilling deep holes—that is, in

and Prices Will Be Gladly pon Request

TWIST DRILL CO.

AND

CHICAGO



HIGH SPEED 424



GH SPEED 425



1915







Tube

Not the kind arising from dyspepsia or the day after the night before but the unrest that goes hand in hand with ambition. Being contented is equivalent to standing still—and he who stands still is already slipping backwards, for time moves forward and progress travels apace. Few things, outside of government by, for and of the peepul, have attained perfection; most have not and a state of satisfaction presages decay and oblivion.

However, much may be said in favor of a cheerful and hopeful mental attitude and there is no doubt that physical ability and rectitude are influenced by the habits of mind. Therefore, dear reader, for the coming and aforesaid glad new year we prescribe as a guaranteed-or-money-refunded cure-all, that gentle stimulant, the milk of human kindness. Let us practice the saving graces of courtesy, kindness and appreciation; then the national business afflictions of rudeness and incivility shall vanish like mist before the sun and, truly, the whole world shall be kin.

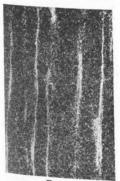
Tradition and popular fancy in the commercial life of this dollar-mad land has created the alert executive as a man of few words—harsh, brusque and rude ones at that. So be it then. But you can mark these words, Horatio: that a slap on the back is worth two in the face; that the principal impulse of life is the attainment of happiness; and that the combination of kindly consideration, sincerely expressed appreciation, and the retort courteous, will accomplish miracles unforetold.

A friend from our well known eastern coast pages ye Ed. to confide that there would be fewer drills broken if more men knew how to sharpen a drill. Ed. echoes them sentiments in his most professional echo, and adds that the whole secret is exposed in the free booklet, "Twist Drills—Their Uses and Abuses", which he is willing—nay, anxious—to send to all and sundry.

AWord About the Structure of Steel

THE average users of tool steel have been thinking and talking about the "grain" of steel so long that it will probably be a shock to them to hear at this late day that there is no such thing in good tool steel. It is true that steel which has been improperly treated in the mill sometimes has a stringy or fibrous structure, but such material is not fit to be made into tools, unless its structure can first be altered by additional heat treatment.

There is a popular misconception that the structure of steel resembles a piece of wood, and that a tool forged to shape is superior to one machined from the bar, the theory being that the process of machining severs the fibres, while that of forging insures their continuity, bending them so that they follow the shape of the tool, or, as it is sometimes



stated, "preserves the grain of the steel." Our experience demonstrates that this is a fallacy.

Figure 1 shows the microscopic structure of a piece of steel which. through improper methods in the making, has a fibrous structure. Such steel is entirely unsuitable for making good



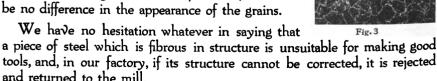
tools. They would be very weak and lacking in cutting qualities.

Figure 2 shows the same piece of steel heat-treated in such a manner as to entirely destroy the fibre-like structure. It will now make good, strong tools, that will stand hard service and do good work. there is any virtue in a forged tool, it is in this, that the additional working of the steel at a proper heat will refine and strengthen material which is otherwise of inferior structure.

We make large quantities of both milled and forged twist drills and are in a position to know their relative merits, and in our factory the inspection and subsequent treatment of steel is so exacting that our drills produced by milling the flutes from a solid bar are the equal of forged drills from any standpoint, and for any purpose. In other words, all of our steel is so refined that it makes no difference whether the drill is forged or milled as regards its cutting quality, or strength in sections of the same area. The forged drill is, in fact, generally weaker than the milled drill of the same diameter because its cross-sectional area is smaller. It can, however, be made from a smaller amount of material, and for this reason forged drills of high speed steel can be sold at a lower price than high speed drills of the milled type.

Although the structure of good tool steel in no way resembles that of wood, it does contain grains of a certain sort. These grains are, however, in the form of crystals, and the better the steel the smaller the size of the crystals. Fig. 3 shows the crystalline structure of a good piece of tool steel before annealing—the crystalline grains, magnified 100 times, are plainly

visible. Refinement of such steel by proper annealing and hardening will so much reduce the size of these grains that it will require a microscope with a magnification of 1000 diameters to see them at all in the finished tool. When hardened tool steel is in its best condition to do good work a polished section in any direction with relation to the bar will show the same structure under the microscope; that is, whether the specimen examined is a longitudinal, transverse, or diagonal section of the bar, there will be no difference in the appearance of the grains.



HE subject of the speed at which a drill should run and the feec revolution is one on which opinions differ and no rule can be give cover all cases. The ordinary tables published should be consid as guides only and the correct speeds determined for each particular case good, sound judgment.

Start at

It is generally a safe rule to start carbon steel drills v Moderate Speed a peripheral speed of 30 feet per minute for soft tool machinery steel, 35 feet for cast iron, 60 feet for brass,

a feed of from .004 to .007 of an inch per revolution drills $\frac{1}{2}$ inch and smaller, and from .005 to .015 inch per revolution for di larger than 1/2 inch. At these speeds and feeds a good cutting compou (see page 15) is recommended. In the case of high speed drills the abo feeds should remain unchanged, but the speeds should be increased to from two to two and one-half times. With these speeds and feeds as a starti point, maximum results should be obtained by noting the condition of t drill in connection with the suggestions in the following paragraphs.

Indications of Too Much Feed

If the drill chips out at the cutting edge there is too muc feed or the drill has been ground with too much lip clea ance. A drill split up the web is evidence of too muc feed or of improper grinding, and no drill manufacture

ought to be expected to replace a split drill unless a flaw is evident in th break. The failure to give sufficient lip clearance at the center of a dril will almost always cause it to split up the web.

Indications of

When the extreme outer corners of the cutting edges wear Too Much Speed away too rapidly, it is evidence of too much speed.

Best Performance

The best performance of a drill will be obtained when the effect of the work on the tool is somewhere between these two extremes.

General High The remedy for drills that are properly ground chipping at ed and the cutting edges is to decrease the feed and increase the ht Feed speed. If a little care is taken to adjust these properly commended the drill will do as much work as before and have much longer life. Although we have seen 50 point carbon steel ed with one of our two inch carbon drills at a periphery speed of 60 feet minute and a feed of .065 inch per revolution, we do not think this is good tice as we have found in our own work that the majority of cases are bettered to high speed and light feed carried to the point at which the outside ters commence to wear away.

ortance Speed in Illing all Holes If the correct speed is not obtained in drilling small holes with hand feed the risk of breaking the drills is greatly increased, especially at the moment the point of the drill is breaking through the farther side of the work. This is due to the operator's difficulty in pressing lightly enough on the

ling lever not to give excessive feed to the slow running drills. In English ile shops specializing in the manufacture of wool combs and kindred products sands of holes as small as .013 inch in diameter (about No. 80 drill) are ed every day through brass plates $\frac{7}{16}$ inch thick. A No. 59 drill is run at at 20,000 RPM, and this is increased to nearly 30,000 when drilling holes small as .013 inch. Care is taken to see that the point of the drill runs ectly true, and it is kept sharp by occasionally rubbing on a smooth oil stone. tside this industry it is a rare occurrence to come across a small drilling mane running at more than a quarter of its proper speed.

illing With tomatic uchines der Flood of rd Oil For automatic machines where holes do not exceed two diameters of the drill in depth, and under a flood of lard oil, high speeds and light feeds are especially recommended. For holes deeper than this it becomes a matter of getting rid of the chips, and slower speeds with heavier feeds should be used as the bottom of the hole is approached. Always en-

vor in automatic drilling to grind a drill so as to get a small compact roll to chip, and if possible keep it intact the entire depth of the hole.

Speed and Feed to Hardness of the Material

Variations in the hardness of the material drilled sho Must be Adjusted course be met by the skilled operator with changes in the and feed. This is necessary as the commercial twist dri be tempered for average conditions, so as to give good in either hard or soft material. A drill that would maximum results drilling hard steel would be entirely too brittle to wor in softer and tougher material.

Drilling Cast Iron

High speeds in cast iron tend to wear away the small p of the drill that represents the full diameter, called "lar "margin," and we think that 35 feet per minute peripheral should not be exceeded for carbon drills. Feed may be from .007 inch to inch per revolution, according to the quality of metal drilled.

Drilling Brass A heavier feed should be used in drilling brass, especia automatic machines, to insure the chips working out, a lubricated at all the tool should be flooded with paraffine oil.

Cutting Compounds for Various Metals

To maintain the speeds and feeds here recommende will be found necessary to use some good cutting compc and we advise the following in the order named.

For hard and refractory steel—Turpentine, kerosene, soda water. For soft steel and wrought iron—Lard oil, soda water.

For malleable iron—Soda water.

For brass—A flood of paraffine oil, if any.

For aluminum and soft alloys—Kerosene, soda water.

Cast iron—Should be worked dry or with a jet of compressed air for a cooling medium.

Warm High Speed Drills Before Using

These recommendations apply equally well to carbon or h speed drills, but it is very good practice to warm the lubric before using it with high speed tools. Any hard piece of stee extremely brittle when cold, and high speed drills should ne

be put to work in that condition; they work much better when warm, often givi good results when the chips are turned blue by the heat generated.

n Finding Your Place



is not an advertisement as you shall see. However, it requires mention ne of our products. But that doesn't annoy us at all, and it may confer a efit upon some kind friend. If so, please write. It concerns our No. 19 Set and Countersinks which are done up in the nicest little round red box. When se them in our esteemed contemporaries, the trade journals, we say some ut "a place for every size, and every size in its place."

as it should be in the well ordered life of drills and other things, especially terning which or whom, this circumlocution is directed. Getting back to the , what we wanted to say is that every man should find a place and then get your talent and inclination lead you to cab-driving, don't waste your golden ing faro-layouts to the Y.W.C.A. On the other hand, if you are a burglar job, get a berth on the Chicago police force or engage in the plumbing or something else, just so it's in your line.

our own case. Long ago the boss once hinted that we should try to write I classic English. Ever since then we've been doing it and now we rank—the rankest.

pegs don't fit remarkably well in round holes and every man does best h he is fitted to do, first by reason of his own preference for that task, and

reason of the heart and effort he puts into it. d's achievements have been wrought by men who ir niche, loved it and then worked. And don't that last part. It's only a little detail, of course, electric spark in the motor, but the fact remains quite handy in case you desire to make any gress.

there are no objections, we will now go into ze, take an inventory and find out which way ng.



MY CREED

I would be true, for there are those who trust me;

I would be pure, for there are those who care; I would be strong, for there is much to suffer; I would be brave, for there is much to dare.

I would be friend of all—the foe—the friendless:

I would be giving, and forget the gift;

I would be humble, for I know my weakness;

I would look up—and laugh—and love—and lift.

-- HOWARD ARNOLD WALTER



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67205 Stack



IAN suceeds not bene advertises isiness, but e he lives it, e he eats it, it, dreams it, air castles it.

e man who builds air never builds of any kind.

e great moower of any ress is the ous personal of the man of it.



Andrew Eadie, Editor

HILE scanning the daily prints our gadding optics occasionally alight on some alluring head-line that runs something like this: "Nellie's Last Chance." Instantly we are all attention. Our ears, eyes and mouth are opened to the physical limit as we prepare to read all about poor Nellie, to whom in our whole selfish life, we had scarce given a fleeting thought. Repentant, we read on and on learning of Nellie's silent suffering, her indomitable fortitude when a fiendish fate was about to overwhelm her in its leather-faced clutch. Sympathy; admiration; hope; in fact the whole galaxy of our choicest emotions surge forth until our manly bust well nigh busts into quivering, shivering fragments. Ah, yes!

Then in the last paragraph, we learn that Nellie was snatched from the jaws of death, back from the mouth of Helngon and other unpleasant places, by the timely use of Dr. Schmaltz Celebrated Corn Cure or Phydia Lynkam's Liver Pills. Then it is that we know why young men go

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wrong, why strong men lose their reason, why faltering virtue hesitates and lame ducks into cosmic oblivion.

Realizing the power for evil that such advertising presents, we long since took a solemn vow that never would we trick, deceive or otherwise misrepresent the primary objective. Never would we debase the sacred cause of advertising by dressing it up like a wolf in sheepskin binding. Never, for example, would we write any light, frothy editorial comments like this one, hoping that we would lead a wary public to water and then make it drink of

the merits of Cleveland tools.

No, kind sirs and gentle ladies, whenever we have anything to say, as we do at times, concerning Cleveland Drills and Reamers, their excellences and sterling worth, we will do so in a conventional and orthodox advertisement that you can easily see and avoid. Of course we must remind you from time to time and for our mutual benefit, that a Cleveland drill holds the world's drilling record; that "Peerless" High Speed Reamers are practically the same (altho much less expensive) as solid high speed reamers; that "Perfect" Double-Tang Sockets save thousands of drills from the scrap heap; but these things, you may be sure, we will never mention in our pure editorial chat.

As Napoleon significantly remarked to Friend Josephine on the historic eve of Waterloo: "How cool the nights are getting!"



Judas Efficiency, began to wane, we were fearful that we were going to be compelled to eke out a sordid existence unleavened by the diversions of concentrated grandiloquence, or a single song from a siren. Fancy, if you have a good robust long stroke fancy, the drab hardships of commercial transactions without some sprightly elfin to warm the cockles of one's heart. Picture, if you're fond of pictures, the sodden and prosaic advance of the legions of business bereft of the stalwart stall-stuff that is as the manna in the wilderness.

But be seated, friends, and rest your fears and weary soles. These untoward things are not to be, for up over a knowing and sympathetic horizon there appears a new face, serenely confident in the knowledge of its infinite possibilities. We refer, of course, to that sovereign pick-me-up, that prophylactic panacea, that long lost sister, Psychology. Already she has explained the cause of the great war, leaving, it is true, an impression that fortresses, battleships and bullets are merely psychological. Our well known president hath said in the wisdom of his heart that we are enjoying (so to speak) a "period of business depression that is purely psychological,"



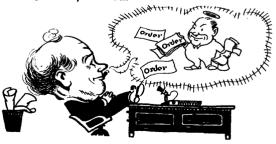
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Page Three

thus creating the logical inference that the results of this depression—unemployment, decreased hours and wages, lack of funds confidence orders et al.—exist only in the imagination. Wonderful is the science of mind!

But it were a poor makeshift psychology that couldn't adapt herself to greener fields than these. So just to show her versatility she has entered the realms of selling, of advertising, of business management, and with results that we are yet to see. Looking into the Utopian future, we can see the subconscious ego of a very material salesman, making a call on an imaginary, and no longer elusive, buyer. They exchange mystic greetings and after an interval in which their souls have communed regarding the needs of the trade, a visionary order is received which, in due time, reaches a spectral factory. Immediately, for there is always a stock on hand, the goods are shipped on one of the Erie Fliers or some other phantom train. Simple, isn't it? And all that's needed is a little more faith!

Apotheosis of blue sky and paste diamonds; extract of majestic claptrap; essential oil of razzle-dazzle; in other words, Psychology — consider yourself saluted.



Page Four

C·T·D· © Restaurant Resonance



IT is not our intention or desire to deprecate, malign or in any other way traduce the restive restaurant. For it has a place to fill, as it were, and is a sort of necessary evil, like a doctor or the tax assessor. We are referring now, to those mere coaling stations where one pounds into his slip, gets his bunkers regaled in 7 minutes flat and then lists heavily out again to the raging Main street. Some there are who labor and exhaust themselves under the delusion that a restaurant should be utilized solely for the consumption of oats and ensilage, and while we grant the importance of that function, we nevertheless maintain the necessity of other details.

Having devoted the major part of the last twelve minutes of our lives to a profound and exhaustive study concerning the economic, psychologic and pneumatic phases of this momentous question—we repeat, having done all this without any wires concealed about us, and with nothing up our sleeve except our arm, we have concluded, it being a fit time to conclude something or other, that three ingredients are essential to the operation of a successful restaurant. First, food; second, people; and third, a socially congenial atmosphere. Our friends, Romans and country men from Steubenville may juggle these three essentials around as they see fit, just so long as they pay the bill and tip the waiter, but if a successful restaurant is one's



No.



H. S. Three Fluted

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heart's desire, this triolet is sine qua non, to say the very least. Without any one of these adjuncts one might as well stick an ordinary hat pin into their restaurant respirations, and take up a correspondence course on How to Run a Wheelbarrow.

All of the foregoing wisdom so easily dispensed with is just linotype scenery or prop stuff for the main plot, to which we are trying to work our way around before we are caught in the infamous act. Well, then, to make a long story longer, we show below* a view of our own restaurant, where at high noon we are wont to foregather, adjust the world's bitter plight and incidentally allay the pangs of righteous hunger. For that matter we can safely guarantee to satisfy the whole gamut of plain and fancy hungers, having in instant readiness at the noon-tide stroke the complete luncheon as per specifications that one submits on the preceding day, the extortion for which ranges from six cents for a moderate repast to fifteen cents for those wishing to go the whole distance and take a chance on dyspepsia. After the inner man has been fittingly nourished, the mind may be relaxed or improved by the use of the library, where may be found literature of any speed, depth or intensity. Or on the other hand, the reflective ones may meditate on the folly of things at the shrine of Lady Nicotine, the shrine doing a prosperous business for but one brief hour.

An observant reader will observe the table marked with the cross. That cross, contrary to popular belief, doesn't indicate the location of the victim's body upon the hasty arrival of the police on the following Thursday, nor was the cross presented for unusual bravery. It simply shows the festal board where ye Ed. and Privy Councillors annex their

* Illustration on Page 10.

forage, and under the gentle stimulus of the flowing bowl of bread and milk, take up and summarily settle man's most complex difficulties.

If there be any skeptics among our readers, we invite them to submit their most personal affairs on which we will pass swift and unerring judgment, publishing the correct answer to all such riddles in the following issue of Drill Chips, thus keeping the matter strictly confidential. In dull periods, and between mouthfuls, we have scientifically panned the idle rich after vain longing to join the inner circle. This is a good trusty subject that can always be relied upon when there is nothing doing in the ranks of the haughty. As the poet would say, it is the rift in the loot. Of course the European unpleasantness was settled long ago and after being created Knights of the Never-Slip Garter, we have passed on to an ordinary arrangement of things for the day to come.

Just now there is rampant in our august and february midst a sect of Pacifists who contend that in the future there will be no wars—that people will outgrow them, and all we have to remark here is the observation that there are still certain ones who have nice little glass eyes that see not, cunning cauliflower ears that hear not, and cute concrete heads that think not, the same being our courteous retort to the opposition. When people get above and beyond wars, they will be far, far above, below and beyond everything and the millennium will be waiting around the corner.

So long as humanity is human, it will desire to conquer, to be in supremacy. There will always be at least a certain percentage of people who desire to excel their neighbors, and this, magnified to national proportions, becomes the desire on the part of a nation to be greater than its fellows.

(Concluded on Page 10.)

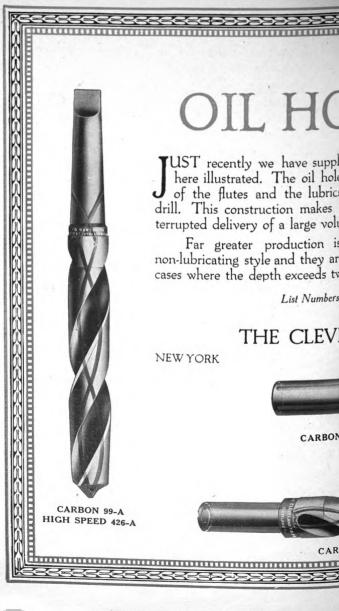






H. S. Straight Shank





OIL HOL

TUST recently we have supplemented here illustrated. The oil holes run t of the flutes and the lubricant is c drill. This construction makes a very terrupted delivery of a large volume of

Far greater production is possib non-lubricating style and they are especi cases where the depth exceeds two diam

> List Numbers Are Inch Furnish

THE CLEVELAN

NEW YORK



CARBON 200-A



Coogle





426

E DRILLS

our line of oil feeding drills with the designs arough the solid metal conforming to the twist delivered directly behind the cutting lips of the strong and durable drill, and allows the uninbricant at any desired pressure.

de with these oil hole drills than with the ally desirable for drilling deep holes—that is, in

ied and Prices Will Be Gladly ad Upon Request

D TWIST DRILL CO.

EVELAND

CHICAGO



HIGH SPEED 424











If the world disarms, there will always be someone among the participants who will conceal warships in the cellar, waiting for the time when the other nations are helpless, at which time there will be found sufficient pretext to declare war. This is only humanity, although it isn't particularly creditable.

The greatest progress for which we may hope in the future is the time when an international police force is maintained by the nations, to enforce the agreements entered into between them.

After all, this is only carrying out with nations the policy which is now necessary with individuals. When the world realizes that peace is essential, it will secure it by arms. When humanity grows to a point where no nation among those of the world needs restraint, where no individual needs to be punished for his misdeeds by other individuals, then we shall no longer be humanity. We shall be in Heaven, and our only worry will be the high price of harps and the set of our halos.

Armament will always be necessary. The only difference between the present condition and that of the future is that the future armies and navies will be maintained to preserve peace. An armed peace, it is true; a forced peace; but peace nevertheless, and cheap on any terms.

Come on, boys, what's next?

Coogla



"HIS is a random thought on the intricacies of fly-paper. But it doesn't stick to that subject necessarily. Pardone, monsewer.

Well, the plot coagulates around a recent judicial decision of a United States District Judge, in settling to his own satisfaction a trademark suit instituted by a manufacturer of fly-paper. Said the learned one in conclusion: "People usually buy fly-paper to catch flies, and they do not care about the trade-mark." This may excite surprise in the bosom of manufacturers of trade-marked goods, but the oracle has spoken.

Every business has friends. They may be friends of the General Manager, the Office Boy, some mere stockholder, or just plain oldfashioned friends of the business itself. And the most valuable asset of

any business, large or small, is its friends.

The manufacturer of the fly-paper who brought and lost the suit, certainly had friends. And they didn't all live next door to the factory.

So now when Mrs. Brown of Peoria, Ill., discovers a new and complex stippled decoration on the freshly papered walls of her boodwah, and says to her son: "Sammy, run down to the drug store and buy Mamma ten cents worth of fly-paper and be sure that it's 'Swattem's,' because Mr. Swattem's father and your grandfather were friends"—that boy will

probably bring back a package of Dr. Swatt's Forensic Fly Food. And both ancestors will shift in their ancestral shrouds to the mournful melody "People buy fly-paper to catch flies."

Or Mrs. Smith, who spent much money ast summer protecting her provisions from the mnivorous onslaughts of the multitudinous iuscae to learn that after all "Swattem's" flyaper was the best, is sold a package of Dr. watt's F.F.F. believing that not for nought



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Page Eleven



did she spend that 45c last summer. And the pea rolls merrily up the storekeeper's sleeve, while the three empty shells rattle on the counter, and the recorder writes "People buy fly-paper to catch flies."

If there is a person in this world who can tell whether fly-paper will catch flies by looking at it, we don't want him to look at us. We've bought fly-paper that didn't catch flies. It might have been the erudition of a certain

tribe of flies that thwarted our murderous attempt, but how were we to know it? Naturally, we blamed it on the maker of the fly-paper.

The Judge says we buy fly-paper to catch flies. But he doesn't tell us how to learn in advance whether it will catch flies. Like the flies, we must run chances of getting stuck. And, according to his honor, we are not privileged to get stuck but once. In all material life there must be a method of distinction. Nature provides it in all she does, and man in his customs and laws must provide it, or chaos will result.

A trade-mark, if rightfully possessed, should be as sacredly revered as a man's name on a check. There have been too many "Just-as-good" sales made by American retailers. There has been too much poaching of trade-names, and trade-marks by American manufacturers. But relief seems to be coming—coming through the aid of honest appeal to the buyer by the maker of merchandise. Call it advertising and you glorify the name.

The Judge was right when he said, "People usually buy fly-paper to catch flies," or he might have said, "People usually buy drills to drill holes." But in these high-geared days of Damon and nights of Pythias anyone is wrong who says, "People do not care about a trade-mark."

Noted Examples:

THE AMERICAN FLAG

CLEVELAND TWIST DRILLS



HE door of the General Manager's private office swung open as 1 office boy made entrance for the approaching salesman. The gene manager, corpulent and massive, filled to overflowing his chair, and the door opened he swung slowly and ponderously around like a lethars pachyderm.

"Gee!" disrespectfully and in Sotto voice commented the office boy, could do a day's work while that guy is swingin' around in his chair!" And

allowing for his expressive exaggeration, so it seemed.

Because men move slowly is no reason for deducing that the amount c work they do is either meager or of small avail. Contrariwise rather. Fo instance, a Colt automatic can fire an unbelievably large number of shots it a minute and appear to do a miraculous devastation. Yet a large gun o thirteen-inch caliber which can be fired only at ten minute intervals car produce indubitably greater results when given the same task.

A woodpecker with his staccato tap-tap can bore life out of a tree in seemingly short order. But a member of the genus elephant can make toothpicks of that same tree almost as quick as you or I can dodge a well-aimed snowball.

Ingurgitated by a tidal wave of work your bank clerk jumps about like the proverbial White Wyandotte on a caloric carpet-tack. Your bank president on the other hand with an equal amount of business infinitely more important, accomplishes its Waterloo without flurry and with an apparent modicum of effort.

And why should this be? Well, simply because men in the high places "big men"—move slowly—but surely. Caution, perhaps, inbred by experience, or a clarified vision of "things as they are," or surety of that quality of "being able to do"—any or all of these may be the reason for this slow but sure quality exemplified today by the man at the helm.

Whatever the reason, your executive head moves forward to the successful accomplishment of his work slowly but surely. Like the 13-inch gun, he

"makes every shot tell."



ırm High ed Drills fore Using Any hard piece of steel is extremely brittle when cold, and high speed drills should never be put to work in that condition; they work much better when warm, often giving good results when the chips are turned blue by the heat generated.

thing will "check" a high speed drill quicker than to turn a stream of cold er on it after it has become heated working in a hole. It is equally bad to nge it in cold water after the point has been heated in grinding. Either of se practices is certain to impair the strength of the drill by starting a number mall checks in it.

ing Not tting Ability

A fact often lost sight of, even by experienced users of drills, liable Test of is that cutting ability and hardness are not the same thing. This is especially true of high speed drills, the apparent hardness of which varies with the composition of the steel and

10 indication of the cutting ability. Some of the best high speed tools we e ever tested could be filed so readily that if this were any indication of the k to be expected of them they would be condemned without a working trial. high speed drill that cannot be filed may, by exercising the greatest care, be de to drill extremely hard material successfully; but for softer materials, or ere a large amount of work must be done in a given time, it will be found 50 tle as to be worthless

Numerous tests have proven that the hardness of files varies quite as much that of other hardened tools, and this is another reason why file tests are eliable. No drill that files hard or soft should be condemned for that reason ne, but should first be given a drilling test in material of known hardness.

eakage of Defects in

Drills that are properly hardened and pointed and run at ills Often Due moderate speeds and feeds are often condemned on account of breakage when the trouble rightly should be charged to illing Machine the drilling machine. If there is any spring or lost motion

between the upper part of the machine and the table, the drill will not cut until the pressure has taken this up, after which the feed will be practic stant until the point of the drill breaks through. As this happens the resis the penetration of the drill is abruptly reduced, and any spring in the part machine will cause the drill to "hog in". The sudden increase in torsion which is thus produced frequently causes drills to break.

There is another way in which spring between the parts of the machin times breaks drills. Any movement of the table with reference upper part of the machine throws the spindle out of alignment, tending to be drill or cramp it in the hole. Practically the same result is produced as wl work moves on the bed of the machine, due to its not being securely fastened If the hole is of any depth the drill is almost sure to go, regardless of its tempe condition of its cutting edges.

Drilling Hard Material

The drilling of hard material is facilitated by using turn as a cutting compound, and by grinding off the sharp an

the cutting edges, as shown in Fig. 16, so as to permit the use of heavy feeds without chipping the cutting edges. This must be done with extreme care and good judgment, however, or the drill will be unfitted for further use.

This form of point will also be found efficient in drilling soft material, like where the regular point has a tendency to "hog in" or "grab".

Thinning the Point to Make Drills Feed Easier

Drills are made to feed to their work easier by thinning extreme point. This is a delicate operation and requires: skill on the operator's part, but is a decided improvemen

hand feed drilling, or when using high speed flat, or flattwisted, drills with heavy webs. To thin the point properly a round face emery wheel is necessary, and the drill should look like Fig. 17

when finished, care being taken to preserve the true center of the drill and weaken the web too much by extending the ground portion too far up the flu

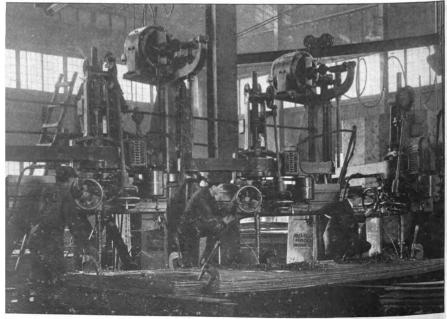
MORE HOLES.

E operators, with the battery of three high speed radial drill presses produce 0 holes in nine hours. The drilling is done in steel plates which are piled beams. The depth of the holes ranges from 4 to 16 plate thicknesses.

om the letter of Mr. M. W. Master, Superintendent of The Petroleum Iron Works Co.:

rk shown in photograph is part of ract now being gotten out for erecta. This method is used to get the ency in riveted joints on high pressis the drilling leaves the steel in condition than punching.

re used a large number of drills of les and find that the 'Cleveland' I Drills No. 405 give the most aclts and they have been operated quite successfully at a peripheral speed of eighty feet (80) a minute and a feed of .0085 per revolution, when kept properly ground and lubricated. It is our custom to determine by actual test the number of holes that can be drilled before the drill shows signs of wear on cutting edge. When this is determined the number of holes to be drilled before grinding is limited to something less than the test figures."



Photograph by courtesy of The Petroleum Iron Works Co., Sharon, Pa.

BE STRONG.

Be strong!

We are not here to play, to dream, to drift, We have hard work to do, and loads to lift. Shun not the struggle, face it, 'tis God's gift.

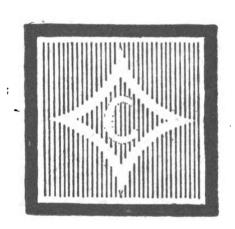
Be strong!

Say not the days are evil—who's to blame? And fold the hands and acquiesce—O shame! Stand up, speak out, and bravely, in God's name

Be strong!

It matters not how deep intrenched the wrong How hard the battle goes, the days, how long; Faint not, fight on! Tomorrow comes the song

-MALTBIE D. BABCOCK



FORMARCH

Coogle

THE reason so few people twhat they nt is because by don't want hard enough use real effort bringing things eir way.



THE CLEVELAND TWIST DRILL CO.

Andrew Eadie, Editor

N looking over the columns of the Outlook and other publications devoted to wit and humor in their most virulent forms, we gather that there is some hubbub going on about goods "Made in U.S. A.," "Made in Detroit," "Made in Philadelphia" and sundry suchlike places that one can locate on any good atlas. But, we would fain inquire, what boots it? Or in other words, why become het up and red in the face because your product happens to originate in Ypsilanti, Coshocton or Pittsburgh? That is merely an unfortunate circumstance having nothing to do with the quality, merit or desirability of said product and there is no rhyme or reason in proclaiming its affliction.

Do you, for example, buy Cleveland Drills and Reamers because they are made in Cleveland or in the U.S. A.? If the only argument we had to present in behalf of our tools was the fact that they are made in Cleveland, how long before we would take our place in the bread line? People buy where they

can get the best value and if they can get more for their money or the same for less money from Germany, England or any other cultured and Christian land, the sentimental manufacturer who sings his swan song about "Made in America" might just as well nail up the doors and crawl under his desk for a prolonged period of rest. This doesn't imply that patriotism or civic pride should be tossed into the discard like a four card straight that has been called, but rather that they should not be used as an overwhelming four-ply selling argument for goods that can't stand without props.

We will now back into the round-house, change engines, and flick off a truthful anecdote on the reciprocity infection. few days ago a perfect stranger invaded our editorial dormitory, announced in stentorian tones that his company was using Cleveland drills, and asked that we sign up for a page advertisment in a magazine that he and several other employees were going to issue. The magazine had no visible or concealed circulation except among other employees, their friends and relatives, and its pages were devoted to narratives of the doings within the organization, such as supplying a fitting name for the storekeeper's new baby, the bookkeeper's approaching marriage and other like follies. The whole thing was as interesting as a telephone directory and we gently implied there would be nothing

stirring. When our caller could control his sputtering and wrathful indignation, he managed to ask why we thought his company was buying our tools and we, in our innocence, opined that maybe it had something to do with the tools themselves and added, as an afterthought, that we would gladly send the new baby a pair of boots or some token of our appreciation. The offer was curtly declined and our friend departed vowing vengeance would be visited upon us a-plenty.

Can you beat it? The merit and utility of the product laid aside like a one cent mailing, while the argument rests en dishabille on the fact that the party of the first part is using some of your own immortal output. Trade reciprocity is a good sanitary plan and it promotes friendship, good fellowship and general joyousness all around, provided it is based first on the value and service offered. But it isn't good sense, good business or good manners to ask or expect consideration on a charitable or philanthropic footing.



he offer was curtly declined and our friend departed
vowing vengeance would be visited
Page Thr
upon us a-plenty,"

Page Three
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No. 403



H. S. Taper Shank



OVERNMENT is the business of the whole nation. There is nothing more important to our destiny, as a nation, than that it be influenced and guided by the whole people who are to be governed. On this condition our collective progress has its foundation.

We have been and are now confronted with the sorry spectacle of the havoc wrought by a departure from this principle. Permitting our national life to be controlled by legislative bodies, ninety per cent of which are lawyers, has produced an intolerable situation demanding the most drastic measures if relief is to be had. The profession of law is a useful one, it is an ancient one, and it is usually an honorable one, but this is essentially a commercial nation and the marvelous industrial development it has attained is eloquent testimony to the inherent virility of its business life. A surfeit of legislation by and for lawyers, devoid of even rudimentary business training or judgment, has impeded our progress mightily and whatever eminence has already been acquired has been in spite of obstacles consistently and diligently imposed. Whatever may be said of Germany, her philosophies and ambitions, the fact remains that her most prominent commercial position was acquired by efficient and helpful co-operation of the government with the business interests. Commercial enterprise was encouraged instead of hindered and the result was a more rapid industrial development than the world had ever before known. To maintain our rightful position, by reason of our resources, facilities, and limitless ingenuity, are we to be compelled to adopt a monarchial form of government? That ought not be necessary, altho it might be vastly better for all of us, and certainly it would not bring about a more chaotic condition than now obtains.

Without entering into the relative merits of the various forms of government, can we not take the one we have inherited and which presents so many beneficial possibilities, and look for some remedy to right its wrongs? We, as the governed, must be judged by the governing body we have installed or silently permitted to be installed. In any case where the shortcomings are so patent, where the iniquity is so obvious and the remedy so apparent, some measure to correct the deficiency ought to be applied, if we are not content to languish under a costly indictment of our much mooted resourcefulness.

Political life as it now exists offers no attraction to the capable business man. The ways of politics are not the ways of business. Efficiency, economy and honesty are virtues almost unknown to those making and administering our laws. In their place, our academic rulers have substituted extravagance, padded pay-rolls, conscienceless squandering for useless waterways and other public works and when all else fails there remains the highly diversified pork-barrel. If a business man attempted to conduct his institution along the lines his government has fashioned and adopted, his competitors would force him into bankruptcy and possibly into jail.





Three

Through assiduous effort to distract attention from his own motives and purposes the demagogue has been hurling mud at the business man, the employer of labor, for so long that the public has come to attach some importance to the charges; especially as the business man has not seen fit to retaliate or defend his name in any way. Without doubt there have been rogues in commercial pursuits, just as there have been in the professions, but in the former case the muck-rakers, professional reformers and the yellow press, have sought to use the isolated case as an illustration of business methods as generally practiced. The plain fact of the matter is that the whole fabric of our civilization depends upon our business men. The charitable work of the world as well as education and religion are supported by the business man and thousands—the whole unthinking masses—are dependent upon his enterprise and sense of responsibility. The ethics of business are well recognized and of a high moral character and were they injected into politics they would purify public service and make this the high calling that it should be, but unfortunately, isn't.

We are suffering from too much law. We need less theory and more of the mature judgment that can only come from business experience and training. We need efficiency and ordinary everyday honesty. We are not getting these things from the class of men to whom we have entrusted our national welfare. They have had their chance and that business has survived at all under the burdens prescribed is not due to a lack of zest in the attempts to founder it. Business, so far, has lacked organization—the kind of organization that will project business experience and business ideas into the council and the

administration of public affairs. There is a desperate need for the judgment and experience of the man of business. To attain this desirable end the business man must take hold and assert himself, for his own protection if for no more altruistic purpose. Those now in power will not willingly abdicate. They must be forced by organized business effort, supported as it will quickly be, by the public which now sees the effects of business depression. Surely our salvation as a representative government is worth a change of diet, whatever inconveniences that process may entail.

A V A

Work in every hour, paid or unpaid, see only that thou work, and thou canst not escape the reward; whether thy work be fine or coarse, planting corn, or writing epics, so only it be honest work, done to thine own approbation, it shall earn a reward to the senses as well as to the thought: no matter how often defeated, you are born to victory.

Dear to us are those who love us; the swift moments we spend with them are a compensation for a great deal of misery; they enlarge our life—but dearer are those who reject us as unworthy, for they add another life; they build a heaven before us, whereof we had not dreamed, and thereby supply to us new powers out of the recesses of the spirit, and urge us to new and unattempted performances.

— Ralph Waldo Emerson.







H. S. Straight Shank



HIGH SPEED I



No. 84 HIGH SPEED SET

Here are presented in compact and convenient form all the sizes of straight shank high speed drills, steel wire gauge, from No. 1 to 60 inclusive. These number sizes are plainly marked on the drill and on the stand in a position opposite the proper hole. Even numbers are on one side and odd numbers on the other, thus assisting in ready selection.

RE especial tool rochanics' bent

HIGH SPE ing the place of the modern as these drills in won the stands are convenience to stands are of adapted for the and they are risin oxidized thandsome and desired thandsome and desired the stands are of the stands are of

Prices

NEW YORK OFFICE 30 READE ST. THE CLEVELAND

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DRILLS IN SETS

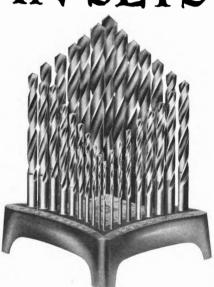
cially useful in ms and on mehes.

D DRILLS are takcarbon drills in most defficient plants and arious sizes, arranged shown, offer a great the workman. The composition metal, particular purpose st-proof. The finish opper, which is both urable

on Request



TWIST DRILL CO.



No. 54 HIGH SPEED SET

This set comprises all the sizes of jobbers' straight shank high speed drills, from $\frac{1}{16}$ inch to $\frac{1}{2}$ inch inclusive, by 64ths.

Each drill fits into a hole plainly marked with its size. As all the 32nd sizes are on one side and the 64th sizes on the opposite side, selection is made easy.

CHICAGO OFFICE 9 NO. JEFFERSON ST.



No. 426



H. S. Oil Tube Drill





OST proverbs are either fallacies or bushy bromides suffering from physical exhaustion. In both cases they deserve as much attention as a one inch advertisement on a last year's calendar. But with your permission we will step into the cannery and haul down that old grind about the ounce of prevention and the pound of cure, particularly as it relates to the maintenance of human health.

Health is as necessary to success as a Sunday door to a prosperous bar, and there is nothing so pitiful as a man who has to declare a truce to negotiate terms with the medical fraternity. Not that the doctors aren't a boon to faltering and hesitating civilization. The practice of medicine is a noble calling and rightly the physician has been styled the flower of our race. He has done yeoman service in the glorious work of relieving suffering humanity and his marvelous achievements shall go thundering down the ages. Who was that in the rear that laughed? Leave the room, sir!

Being ridiculed like that right out in open meeting when we were trying to be so nice and kind, we will now patter up to the witness stand with the incriminating story. Having been an unwilling accessory before, during and after the fact we feel qualified to wax enthusiastic on the harrowing subject. Our enthusiasm doesn't amount to an affliction, however, and there is no intention or desire to become disorderly and break up the furniture.

Well then, if you must know, the truth of the matter is that most doctors couldn't diagnose a broken arm without blue prints and a spirit level. They wouldn't know the difference between hydrophobia and a Mohammedan dogma. In short, they couldn't cure a ham. They may have heard somewhere that a cold is a

frequent ailment, but it's an easy two to one shot that they couldn't tell whether said cold is caught with a steel trap or a butterfly net. In the course of the past three years we have had the high privilege, opportunity, distinction, honor,—etc. ad valorem—of consulting with eleven celebrated medical yokels and have been told in the solemn tones of the oracle that we were suffering from everything in the book and several minor troubles that would be catalogued as soon as suitable names and list prices could be arranged. But this is not a recitation of our personal grievances as Drill Chips is only a small booklet, altho we might point out that when one is on the inside track and skidding, with no one but doctors to help him out, he doesn't need a lorgnette to see that there is something rotten in other places than Denmark. As intimated uppage, a doctor can't help anybody—that is, anybody but an undertaker.

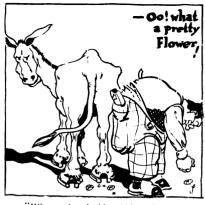
Bernard Shaw, one of our most promising contemporaries, in one of his recent draymas hands the profession a few tender compliments after this fashion:—"doctors perform unnecessary operations and manufacture and prolong lucrative illnesses. Most doctors have no honor or conscience. They are no more scientific than their tailors and the chief difference between a quack and a qualified doctor is that the latter is authorized to sign death certificates. Most doctors will allow their colleagues to decimate a whole countryside rather than violate the bond of professional etiquette by giving him away."



Them's harsh words, Nell!—as they say down in Cincinnati and other places on the kerosene circuit,—but they are plain enough so that any man with a common school education, or even a college man, can pick up the general trend of the sentiment. Maybe Friend Bernard has been eating raw meat again, but at any rate we hope he approached his subject with an unprejudiced attitude, even as we have done. It is a good thing not to



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"When you have health you'd better keep it."

dispense entirely with reason and judgment altho an open mind is desirable on any subject. It need not be opened so far, however, that it looks like the subway.

Now all this leads up to the burning fact that when you have health you'd better keep it, for you have a lily of a chance to get it back after it has gone clattering up the boulevard. Within our own organization we go to some trouble and expense in the issuance of weekly health bulletins that deal with methods

of prevention—the medicine of the future. These notices go to every man on the payroll and besides explaining the usual causes and symptoms of various ills that flesh is heir to, they preach the gospel of the ounce of prevention. Self-preservation is the first law of nature, altho old Doc. Bryan probably had something to do with its discovery, and we'll wager a sterilized ten dollar note that as tempus fugits along, fewer and fewer of the esteemed medics will have such a devil of a time to restrain their merry peals of laughter.

Like other documentary assurances, most guarantees are not worth the paper they're written on. As Confucius or somebody once said: "A guarantee is no stronger than the joker it contains." And it is a singular fact that the firms making the loudest clamor about guarantees are those whose names are not enough to inspire the buyer's confidence. There are dozens of concerns in this country who say not a word about iron-clad, until-death-do-us-part promises. Why? Simply because it is unnecessary. Rouge on the rose can't make it a better or more beautiful rose.

In our own case, we have never given any thought to a guarantee. It is our conception that if a drill isn't satisfactory, forty-seven guarantees will give little assistance in the work of drilling holes. Hole production is accomplished by drills that are drills and not by guarantees that are not guarantees.

Page Twelve



T'S a great pity," said the man with the twinkle, "that so many peop go blind nowadays." "Blind? Why, we thought—

"Oh, not really, you know—only figuratively, which is almost as ba and sometimes worse—to the things that are so near to them, and so familian

you know, that after a while they don't see them at all.

"I have in mind," he went on reflectively "the case of a certain very decen chap who couldn't keep his help. He got plenty of work out of them while they were with him, because he was an inspiring sort of boss, you know—but somehow they didn't stay. They went elsewhere, and he never coulc find out why.

"Fact was, he went blind to their good points, when he saw them every day. He just forgot to tell them how well they were working, after the first week had shown him they were the kind of people he wanted. He saw fast enough when they didn't work right, though—well, real workers need encouragement. They need to be told when they are right.

"Same man did the same thing at home. Took things as a matter of course,



"To the things that are so near to them, and so familiar."

which really ought to have been a perpetual surprise. The goodness of his wife, the peace and quiet of his home—he went blind to them, because he had always seen them, and he never took the trouble to imagine anything else.

"I'm hoping," ended the man with the twinkle, "that the General Manager of the Universe won't have to restore this chap's sight by a painful operation. It has happened before, of course. It has taken failure and sorrow to open the eyes of many a man to the blessings he never knew he had. And so it goes!"

Page Thirteen





The surprising results that can be obtained with properly made twist drills when skillfully handled and working under proper conditions, are well illustrated by the remarkable ords made in a public test at Atlantic City, N. J., in June, 1911. During the nual Convention of Railway Master Mechanics we had a heavy, high-duty ill press in operation in connection with our exhibit, and the results obtained m some of our milled and "flatwist" high speed drills taken from stock are

oulated herewith.

wo-Fold biect The object of these tests was two-fold: 1st, to demonstrate what is good shop practice, the drills were put through at speeds and feeds considered economical under average shop conditions.

ons; 2nd, to demonstrate the reserve efficiency and durability of the drills—stunts" which demanded extremely high rates of speed and feed were attempted.

iood Shop ractice In the test under average conditions a $2\frac{1}{2}$ -inch high speed milled drill drilled sixty-eight holes through a billet of machinery steel $4\frac{1}{4}$ inches thick without being reground. The

rill was operated at 150 revolutions per minute with a feed of .015 inches per evolution and removed a total of 1418 cubic inches of metal. Although the rill was still in good condition the test was here cut short by the convention oming to a close. It had demonstrated, however, what can be accomplished all ay long in any shop properly equipped.

The Highest Drilling Speed on Record In pursuing the second object of the tests, the highest drilling speed known to machine shop practice was attained by a stock $1\frac{1}{4}$ -inch "Paragon" flatwist high speed drill in repeatedly drilling through a heavy billet at the remarkable rate of

 $57\frac{1}{2}$ inches—almost five feet—per minute. (By referring to the table herewith, it will be seen that two drills actually removed more metal in the same time, but this is accounted for by the larger diameters of the drills and cannot be

compared with the above.) The record drill ran at 575 revolutions per with one-tenth inch feed per revolution, and successfully withstood the st this extreme speed and feed. Before attaining the maximum performance stock drills were put through at the rates of $25,32\frac{1}{2},33\frac{1}{2},35$ and $47\frac{1}{2}$ per minute, as can be seen from the tabulated record of the tests. In no cathe limit of strength of the drills reached, but the speed of $57\frac{1}{2}$ inches per 1 could not be exceeded on account of the inadequate capacity of the electri wires to the motor driving the drill press.

Drilling at such high speeds and heavy feeds is, of course, be recommended as economical shop practice, and this performill not, in all probability, be repeated in many shops. The point we wish to however, is, that these results were made possible by carefully established conditions such as: absolute rigidity in the machine, solid clamping of the perfect grinding of the tool, and expert handling.

RECORDS OF CLEVELAND HIGH SPEED DRILLS

Sizes and Kind of Drill	Material	R. P. M.	Feed per Rev.	Inches Drilled per Min.	Rev., Speed in Feet per Min.	Cu. Me Rem per I
1¼" Paragon 1¼" Paragon 1¼" Paragon 1¼" Paragon 1½" Paragon 1¾" Paragon 2½" Paragon 3" Paragon	Cast Iron 3½" thick	500 325 475 575 300 325 335 355 235 350 190 120	0.050 0.100 0.100 0.100 0.030 0.100 0.100 0.100 0.100 0.100 0.100 0.050	25 32 ½ 47 ½ 57 ½ 9 32 ½ 33 ½ 35 ½ 23 ½ 35 ½ 23 ½	163.6 106 155 188 117 127.6 131.5 139.4 107.6 160 115 94	30. 39. 58. 70. 15. 57. 59. 62. 56.5 84.1 39.9 84.8
1¼" Paragon 1½" Paragon 2½" Paragon 2½" Paragon 2½" milled 2½" milled 2½" milled 1¾" Paragon 3 " Paragon 3¼" Paragon	Machinery Steel 4¼" thick	350 225 165 200 150 150 175 275 150	0.030 0.040 0.020 0.020 0.015 0.040 0.030 0.030	10½ 9 3¼ 4 2¼ 6 7 8¼ 4½ 4½	113.7 94.8 100 121 98 98 114.5 125 117.8	12.8 18.6 13.8 16.8 11.0 29.4 34.3 19.8 431.81 37.33

PEERLESS HIGH-SPEED REAMERS

can be run at double the speed of carbon-steel reamers and at that speed will do two or three times as much work without regrinding.

They increase the output and at the same time reduce the manufacturing costs.

"Peerless" High-Speed Reamers cost you only about half as much as the ordinary high-speed reamer because of their special construction.

Blades of finest quality selected highspeed steel are joined by our patented "Brazo-Hardening" Process into one solid piece with a special tough steel body.

"Peerless" High-Speed Reamers are solid and inseparable. The blades will never come loose.

"Peerless" High-Speed Expansion Reamers, on account of their soft steel body will stand more expansion than carbon reamers of similar type. Moreover, they are the only expanding reamers with as many cutting edges as a solid reamer. Catalog 38 shows our complete line.







Somebody did a golden deed;
Somebody proved a friend in need;
Somebody sang a beautiful song;
Somebody smiled the whole day long;
Somebody thought, "'Tis sweet to live."
Somebody said, "I'm glad to give;"
Somebody fought a valiant fight;
Somebody lived to shield the right;

Was it you?



DRILL CHIPS



APRIL

1915

AN ideal is a sort of a star, to which one tries to hitch his wagon. Tho the ideal is never quite reached, there is fine exercise in the stretching—which is one kind of growth. Each day science grows wiser, Cleveland Tools grow better, and ideals become harder to reach; all of which is very good for the product.



Andrew Eadie, Editor

N the good old days — not so very good or old either—we heard a deal of heavy stuff about the call for men who would "obey orders" without question. A vaudeville performance once staged by a certain Light Brigade was immortalized to the delectation of the maudlin by a man who should have known better. The chief characteristic of the Light Brigade was that it was light in the head and it got what it deserved.

The mad hatter from East Aurora once got off an idiotorial about a man carrying a message to Garcia and he proved to the general satisfaction that the man was a fairly good messenger, judged by A. D. T. standards, but that was about all.

The man who is wanted is the man who will obey orders, of course, but who will ask questions if he doesn't understand. Employers are beginning to realize that oftentimes the employee has a mind, the thought products of which are Valuable to the company. So they no longer say in harsh tones "Obey"—they substitute "Understand, and if you don't understand, ask questions." This doesn't mean that an employee shall conduct a searching con-

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gressional inquiry into motives, probable causes and effects, etc., every time he is asked to locate an extinct price list, or that he shall ask the same questions more than nine times a day. You've got to assume that even the boss knows his own name, address, color of his stenographer's eyes and other items of interest.

The employee who asks reasonable questions is most apt to get his work properly done and then again, he learns so that he doesn't have to ask questions the next time. Which is in the nature of a distinct advance. Blind, unquestioning obedience commands a low market price these days when one can get a good faithful servant, guaranteed against defective workmanship and material, for a small outlay. But brains, that's another thing again, and they come higher.

This is a "boost" thought but not necessarily obnoxious and it is a copper-bottomed double riveted fact that industrial progress rests with the masses and as they improve mentally, industry as a whole advances. This would be a good opportunity to say something nice about ourselves, how we concentrate our time, brains and energy on the making of better drills and reamers, how we, and consequently our tools, slowly tho steadily improve from day to day, but we are not going to say any more about it. Anyway, we'd rather you'd get the story from Cleveland tools. And it would be more convincing, too.



N the Hartz Mountains they teach canaries to sing by putting their cages alongside of those containing mocking birds. Which bit of unnatural history carries a lesson, as father used to say. And this is the way he used to hammer it in:

If you're satisfied with your position, with your achievements, with your abilities, you're nearly a dead one already. Watch the people around you, see what they're doing, note how they surpass you. It's a fine exercise, my son, and stimulating.

A man is known by the company he keeps, but the company really keeps him. And so you may distinguish two general classes of people: those who seek flattery, and

those who seek inspiration.

The first kind of man surrounds himself with people who tell him how wonderful he is. There are mighty few people so low down that there are no others available lower yet. This man can't possibly progress. It's handicap enough to be satisfied with yourself, but to find other people to confirm you in your own opinion—that's practically fatal. The higher you go the more you are liable to self-satisfaction and flattery from others. Which is one reason why the top rungs of the ladder of success are so little worn.



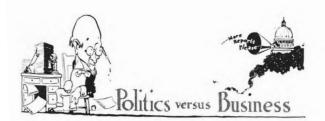
The other kind of man - he's the wise one -surrounds himself with people bigger and better and stronger than he is. Not only this, but he realizes their superiority and strives to reach their level. Oh yes, we pick our own friends, not only consciously but also by our own natures. Like calls to like. And you needn't worry about getting so high that there will be no one still higher up to emulate. When you reach this point in material success (if you are still open-eyed) you can find lessons in the way some little man of no importance bears his trials, or does something else you haven't learned yet. No one life time is long enough to excel in everything. There's always someone away ahead of you, in something.

Finally, it's to be remembered that you can't stand still. Man goes either forward or backward. His direction of progress depends upon his attitude towards himself and towards the rest of the world.

Who was it that wrote of 'the noble unrest that makes for progress'? Whoever it was, he had it right. You can rest assured he learned his song of success by listening to better singers than himself, and not by admiring his own pipes.

Well, we think Father had it nearly right. How about it?





HE interesting letter received a few days ago and reproduced below expresses the views of one individual whose company was harassed by the mania for "investigation" of business:

Chicago Heights, Ill., March 11, 1915.

. . . . Every new crop of statesmen enacts a new set of laws which results in setting to work additional clerks and incidentally adds to the army of non-producers, which in turn adds to the burdens of the tax payers. Successful business men carefully watch their overhead expense—under present conditions it would seem that our Government at Washington has much need to do the same. We are under the impression that many of these laws are forgotten, but the clerks still keep on gathering statistics and drawing their salary. There ought to be a house cleaning in Washington and many of these statistics and reports demanded of manufacturers should be done away with. It is extremely likely that nobody reads them anyway. When the only result of a Bureau of Statistics is to furnish jobs for politicians, it is time the Bureau is done away with. We understand the U. S. Steel Corp. has furnished the Government over sixty-five thousand reports to date and that they are still being asked for more.

"It took pretty nearly all of one of our men's time for the month of January in making out various reports for the Government and for the different states in which our Company does business and the last request was for a complete list of all the accidents in our plant for the last three years. We wrote back and asked them to



No.



H. S. Three Fluted

quote the law under which they could demand this information. They advised us that there was no law and no obligation on our part to furnish it. We told them that we had spent so much time on reports so far this year, that we would like to devote some of our time to managing our own business. You are right when you say we are suffering from too much law.

Yours very truly,

COLUMBIA TOOL STEEL CO.,

E. T. Clarage,

President"

Probably few business houses would object to being investigated if there were a just cause for it, if it served some constructive end and if the work were undertaken by able, intelligent and unprejudiced men. But just for example, consider the Commission on Industrial Relations. Its chairman, Frank P. Walsh, is or was a Missouri attorney and was appointed to his place by President Wilson. To save time, no doubt, this gentleman has revealed his intentions by condemning business and capital in advance. He has personal and socialistic beliefs which he airs freely in connection with wild invective against commercial enterprise. He would "make work" where there is no work, he would have the government take over the land and he is quoted as submitting this naive observation— "Every great fortune is a fundamental wrong. He who gives bountifully to the poor must have first robbed them a-plenty. Every man with a fortune must at some time have crossed the line of ethics and of criminal law." This from a man about to preside over a quasiiudicial inquiry!

The pity of it all.

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Special Instead of Standard Tool Specifications



HERE is probably no question under discussion at the present time of more vital interest to users and buyers of machinery and tools than that of efficiency. Volumes have been written on this subject by some of the brightest minds of the century, and great progress is being made by manufacturers in standardizing their product so as to be able to supply it at the lowest possible cost. Yet, strange to say, there are a great many buyers of tools who fail to take advantage of this standardization in making out their specifications.

Take locomotive reamers for example—upwards of 75% of such tools have to be made up "special." They are carried in manufacturers' stocks with two styles of shanks and two standard tapers, $\frac{1}{16}$ or $\frac{3}{32}$ per foot of length, with flute lengths increasing by inches from four inches in length to ten inches, inclusive, and by two inches from ten inches to sixteen inches, yet, specifications are frequently received for locomotive reamers to be made to blue print that differ from stock reamers only in having the flute lengths somewhere between two of the lengths listed. As the diameters of these tools are regularly measured at the small end, and a half inch more or less of additional length means only that much unused flute at the shank end of the tool, the next longer stock reamer would answer the purpose just as well. In such cases there seems to exist a delusion that the slight saving in material in the shorter reamer will more than counterbalance the extra cost of having it made up special. Plainly, this is efficiency gone wrong!









Another apparently trifling detail is the size of the square on the shank. To change this from standard dimensions often involves making the reamer from a larger bar, and again the cost goes up to suit the seemingly ill-considered whim of the buyer. The same is true of the collar which is placed below the square on the shank to prevent the wrench slipping down on to the fluted part of the tool. A sixteenth of an inch more or less at this point is obviously of trifling importance, yet, an astonishing number of these reamers have to be turned out of extra large size steel, on special orders, at an increased cost, to meet the notions of some designer who has never viewed the matter from this angle.

These are but a few examples taken at random, yet they would seem to indicate that if more attention were paid by tool buyers and designers to these, at first sight unimportant, details, we should have less cause to decry the high cost of living.

*By S. H. Cox, Ass't Gen. Mgr., The C. T. D. Co.

Amidst the hue and cry about lack of employment, it is often forgotten that unemployment of labor starts with unemployment of the employer. The employer is not arbitrarily running his plant at one half or one quarter of his normal production. Scarcity of work for the employee is only a result—an effect of scarcity of work for the employer, and the remedy should be applied to the cause and not the aftermath. Give the employer, the business man with capital a fair chance, and the evils of unemployment for the masses will disappear like mist before the morning sun. Give business capital and the business man some genuine assurance that there will be no destructive attack by the state or national government and prosperity can and will be restored and maintained. There is available just as much capital as ever and it is just and justly as timid as ever.

But a club, ready and waiting, has never been famous as a restorer of shaken confidence.



OME time ago we had occasion to be in Chicago. This fact is not recorded boastingly, but is merely set down as one of those things that occasionally occur in the best regulated lives. The plain undraped truth of the matter is that we have friends and customers there. But that startling statement shouldn't cause anyone to twist his or her mustache in profound perplexity, as we can and do hereby assert fortissimo, and without fear of the Interstate Commerce Commish or the Blackhand, that we can penetrate the uttermost and wildest recesses of this here terrestrial globe, turn the nearest corner and find a Cleveland drill making holes and friends. Thus taking in the whole of our well known planetary transmission, with unusual generosity, we are bound to include Chicago as well as other strange places. Which brings us back to the main plot which we had well nigh lost in our excitement.

What we started out to say, in dignified and well modulated tones, was that while we were over in that there place, we encountered several progressive and alert manufacturers who wanted information concerning our shop methods, welfare work and plans for the social and industrial betterment of our employees. There's no secret about it, so we thought we might as well let in the rest of our large family of readers in the hope that somebody might thereby do something for somebody else, causing

a little more happiness to leak in somewhere.

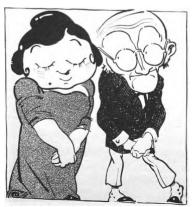
In past numbers of this immortal work we have pictured with more or less incidental scenery our restaurant, library and suggestion system. Now we are about to drop a few pertinent facts concerning our Recreation Club.

Some people have the mossback idea concealed about their premises that recreation and the pursuit of pleasure are extravagances to be indulged in sparingly. Also there are some people who don't believe in equal suffrage. We can't explain these things. We only know that they are so. Why, we have even heard that there are men who don't think that

Billy Sunday and Doc. Bryan are the mainstays of our sunkist nation, but as this seems incredible, too much importance should not be attached to it.

Every employee of this company, regardless of age, sex, political beliefs or laundry marks is a member of the C. T. D. Recreation Club and this, mind you, without payment of any initial fee, dues or other form of extortion. Of course one can't have a continual gosh of a time forever without here and there prying off a nickel or so. That, dear friends, is as hopeless as trying to shake down friend Beef Trust with a mittimus and a parlor rifle. So during the long and hard winters we give dansants—you notice how carelessly we get this off—where one (and friend) may dansant ad lib. and then some. The gate receipts, while not large enough to buy a seat in the Senate, are sufficient to put over an annual summer outing and provide the paraphernalia and prize cups made of regular silver, for the winning crews in our base-ball, bowling, tennis and hand ball leagues. Last summer we had 32 indoor baseball teams recruited from the office and various departments of the factory and the winners picked off a piece of bric-a-braw just like the ones Tom Lipton used to bring over. And then, at that summer picnic the bunch stacks up like Kitchener's new army, and the lid comes off for all kinds of good sanitary sport except that well known game called postoffice, which we understand is not hygienic and besides is an indoor recreation.

Considered from any acute angle you wish, the idea of a Recreation Club is 99.44/100% nifty, for it promotes good fellowship, eliminates petty



Page Twelve

inter-department jealousies and lifts part of the curse from the sordid things that flesh is heir to. We operated our plant before and after taking and that Sunny Jim smile you see isn't the kind that you wear when you tell the lady what a perfectly lovely time you had at her party. A Recreation Club, if rightly conducted, induces the spirit of co-operation and loyalty, the well known propelling forces toward the goal of individual and collective success.

Than which, lago, there is nothing greater.



The Structure of Tool Steel

By J. V. Emmons, Chief of Metallurgical Staff, The C. T. D. Co. Reprinted from paper presented before The Cleveland Engineering Society and published in their Journal, March, 1915.

OOL STEEL may seem at first to be a very special subject, of inters to but few. Actually every man is brought into intimate relations with some form of tool steel many times every day. As he rises in a morning he shaves with a razor of 1.50% carbon steel made in New Yo He files his nails with a file of 1.30% carbon steel made in Philadelph He carves his steak with a knife made in Sheffield of 1.10% carbon steel His pocket knife is made in Germany of 1.20% carbon steel. The delical springs and pinions of his watch, all of highly tempered tool steel, guide his to his office on time. So all through the day tool steel is the servant of main countless intimate and personal ways.

But in the work of the engineer, tool steel is even more indispensable. Fro the time the designer first picks up his drawing instruments until the last riv is driven in the structure or the last screw in the machine, hardened and ten pered tools play their part. With all this universal use of tool steel, what a elusive and indefinable thing is quality. How many of you have borrowed mechanic's pet screw driver? Do you remember how unwilling he was to lend it He knew that a first class screw driver was hard to find and harder to keep And there is no way to tell before you buy it whether a screw driver is good or bad. Some time ago I bought a pocket knife from a large hardware firm in the city. I paid enough for it to insure as I thought getting a good knife. After trial I soon discovered that one of the blades of the knife was so brittle that you could break large pieces out of it with the thumb nail. Upon returning it the knife was at once replaced with another, similar in appearance, of the same make. One of the blades of this knife was so soft that it could be bent over at right angles without breaking. The knife being replaced a second time I found a knife that has been the best I have ever carried.

An examination of the two defective knives revealed that the first had a structure similar to Figure 1, the long coarse lines of which greatly weaken

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esteel. The second knife with the soft ide had a structure similar to Figure 2, in the carbon is all in the form of graphite, ving no useful purpose. This structure is nost exactly like that of malleable cast iron, white grains representing pure iron, the take graphite. The good blade has not been amined, but it undoubtedly has a structure e Figure 3, in which the fine uniform structure shows clearly the quality of the material.

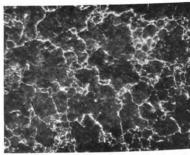
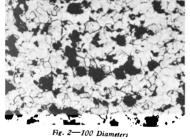


Fig. 1-100 Diameter.

et these three knives under ordinary examination appeared exactly the same. rthermore, the chemical analysis is undoubtedly similar. The difference in quality a matter of the different arrangement of the various chemical

constituents or in other words the structure.

With this introduction we will proceed to study in detail the micro structure of tool steel. Tool steel ordinarily contains from 0.60% to 1.75% carbon. The principal structural constituents of annealed tool steel are Ferrite, Pearlite and Cementite. Ferrite is pure iron and usually appears under the microscope in the form of small hexagonal grains.



ree parts of iron to one of carbon. It is remarkable for its great hardness and ittleness, and its resistance to attack by acids. It usually appears white under the iscroscope.

Pearlite is an alloy of iron with 0.84% rbon and always appears to consist of altertee plates of Ferrite and Cementite.

Ferrite, being pure iron, is very soft and eak. Cementite is harder than glass and ry brittle. Pearlite consisting of a mixture the two is harder than Ferrite and tougher an Cementite.

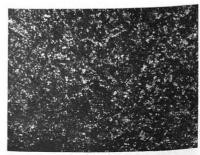


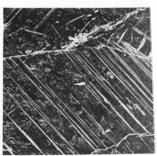
Fig. 3-100 Diameters

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The principal constituents of hardened tool steel are Martensite and C The Cementite is the same as described above. The Martensite is a s carbon in iron which possesses great hardness. Its structure is remarkable, co very fine interlacing needles which probably give it its great strength. Hard tempered tool steel contain two other constituents, Troostite and Sorbite, softer and tougher than the Martensite from which they are derived by to but still much harder than Pearlite.

By far the larger part of the tool steel now on the market is made by the process. This, the oldest of all processes of steel making, consists of melting

together with carbon in the form of charcoal, in a crucible and pouring into an ingot. From this process crucible steel has often been called 'cast steel". Tool steel as it is cast is very brittle and unfit for any purpose. Its structure is coarse, consisting of Pearlite with an excess of either Ferrite or Cementite, depending on whether the carbon content is below or above 0.84%. The structure of a tool steel ingot containing 1.30% carbon is shown in Figure 4.



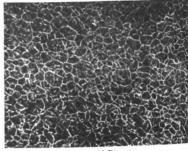
From this starting point the process of manufacture of a tool steel produc of refinement of structure. In the steel mill the ingots are first inspected, and the pipe in the top broken off and discarded, then reheated and hamm rolled to a billet. This hot working breaks up the coarse crystals and refin structure very appreciably. The structure of a high carbon billet is shown in Fi

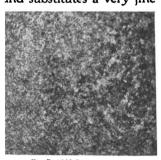
the grain size of which, while still large, is superior to that of the ingot as shown in Fig

After the billets have had the surface fections chipped or ground out they are reheated and forged or rolled to a block, or bar according to the purpose for whic steel is intended. This working which is u at a lower temperature than the previous results in a still greater refining of the size. See Figure 6.



steel is now in the form as received by the er but before it can be machined the structure still further refined in order to give it softd put it in proper condition for hardening. accomplished by carefully regulated anneal-This annealing consists of heating the steel perature above its critical point usually about F. and cooling very slowly. This treatment up the coarse network which has been such inent feature of the several stages shown and substitutes a very fine granular structure in its place. Figure 7.





Steel in this condition is now ready for machining and hardening. The machining has of course no effect on the structure of the steel. The last stage in the series of refining processes is hardening. The principal structural changes which take place on hardening are the change of Pearlite to Martensite, the absorption of all Ferrite present, the absorption of part of the free Cementite and the breaking up of the remainder into smaller sized particles. In the case of a low carbon tool steel these changes pro-

Fig. 7-100 Diameters n amorphous mass of Martensite in which even the highest powers of the microand it difficult to distinguish a structure. In a high carbon steel the Martensite thickly dotted with small particles of Cementite. Figure 8.

final heat treatment, drawing the temper, results in a change of a portion of the

nsite to Troostite and Sorbite, toughening the and reducing its hardness but not affecting the of refinement. This structure is the one will be present in all high grade tools which seen properly hardened. In the preceding of operations for the refining of the structure of teel from the ingot to the finished tool each ion may be assumed to have been perfectly

Each illustration has been of a perfect piece el for the stage to which it had progressed.

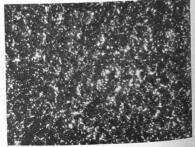


Fig. 8-100 Diameters

A LITANY

FROM learned and unlearned explanation of causes; from prejudiced and unprejudiced attempts to fix responsibility; from heavy and light bunk about effects; from two-spot drivel on rights and wrongs; and from all other forms of gaseous or inky exhalations concerning WAR,

Good Lord, deliver us!



THERE is an Honor in business that is the fine gold of it; that reckons with every man justly; that loves light; that regards kindness and fairness more highly than goods or prices or profits. It becomes a man more than his furnishings or his house. It speaks for him in the heart of every one. His friendships are serene and secure. His strength is like a young tree by a river.—Anon.



Andrew Eadie, Editor

AN ADVERTISING OBSERVATION

LASS now in session, we may consider for a moment the strange circumstance of "quality" and its too frequent presence as a suspicious character. In looking thru the advertising sections of magazines and trade journals we often come across some startlingly subtle stuff that runs its merry way after this fashion: "Bull's Bouillon Cubes are made of the choicest products obtainable," or Flivver motor cars are constructed of the best material money can buy." Turning over a few pages we are confronted with the momentous fact that Kollege-Kut Klothing represents the ultimate and then some, as far as fabrics, workmanship and fashions are concerned. Simply pay a dollar down and a dollar per haps and live happily henceforth. These instances, of chorus, are not typical of all advertising, but they illustrate without music or moving pictures, that in these large highly specialized times, there

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are still some advertisers with the initiative of a fried egg and the imagination of a farmhand.

Putting gently aside the question of truth, if there be any



such question, let us stand up in our Hanans and ask whether these verbal orgies in the realm of superlatives are either interesting or convincing. Hearing no response we ask Does the trade come jostling one again: another up your front steps when you with rare ingenuity bellow thru the open door that your goods are the unqualified best the absolute knee plus ultra? Has anyone, since the foundation of the Ananias Club, been convinced that your goods have the competition backed off into the sagebrush just because you said so in your short, positive monotones? Do the great unwashed hang on your oratory when you are getting red in the face from the fire of your eulogies? Well, not precisely. At least, not any more. The thing simply isn't done since Friend Taurus has come to play such



an important part in our social intercourse.

All this doesn't mean that a manufacturer should unstrap a bale of kopecks from his

(Continued on Page Eleven)

Page Two

Opportunity

NCE upon a time, as all good fables must start, there was a long-haired and sad-eyed panhandler who trekked reluctantly, but not so very, into the public prints with a mossback doctrine about Opportunity. He said the Old Girl came around but once and if she found the blinds down, the lid on or other evidences of there being Nobody Home—then it was assuredly a case of Good Night, Shirt. In other words, she was strictly a one-timer and was not to be classed with insurance solicitors or book agents.

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The fussy brother who generated this sobstuff was in need of a mental manicuring but he was long on theory, so you can see that he was probably a protruding prototype of certain frolicsome Gents now frisking the body politic. It is said that he originally flourished during the time of Louis de Quince. What he flourished isn't so clear. You may be sure it wasn't a sword. Maybe it was a lady's scarf or a forkful of spaghetti. Whose nose? But at any rate the old boy with the single cylinder philosophy about Opportunity is and always has been right in our most middle midst. Faithful? Why, he's on hand when Mary would have had to hire a battalion of subpoena servers to find her lamb.



H. S. Taper Shank

Talk to the small town man and you'll find he's all eyes and ears for the big city. Where a fellow has more of a chance, he'll tell you. Converse with the cloistered city product and what does he say? Well, you know. It's got something to do with a farm, chickens and the Back to Nature places where he could curry the pigs and milk the ducks along about 4 A. X. and be content ever after.

Yet the hard and chilly fact of the matter is that these calamity howlers are standing in their own spotlight and are so filled with pessimistic prattle and the exceeding verdure of the most distant fields, that they couldn't see the main chance if it was as big as the national debt, or couldn't hear it if it came with a 21 gun salute.

For be it known, Yorick, that every man is so completely surrounded by opportunities that he can hardly set his course without colliding with them. But the average man's vision is so short that the jar only causes him to curse his luck. And all the time Opportunity stands mournfully by, awaiting some one to elope with her.

The man who does the thing at hand, putting his whole heart into it, is unconsciously blazing the way to greater things and sooner or later he rings the bell. For what shall it profit a man to have all the chances in the world if he fails to take advantage of them?

And the hardest loser in the deck is the man who never took a solitary one.

Page Four



luct at lisa

and t HE subject of railroad regulation is one which ury th concerns, more or less intimately, almost every X at manufacturing industry in the country. The railroads represent the greatest combined buying power in the United States, and their prosperity or lack of prosperity is bound to be reflected in the financial condition of every industrial community. Thus, unsound and intemperate legislation with which we have been so bountifully supplied, and which aims to prevent the railroads from making a profit, not only has accomplished that unfortunate purpose—but it has seriously curtailed the business and profits of many other institutions dealing in

The following, reproduced from a recent number of "Printers Ink" is eminently expressive.

"Just by way of illustration of what it may mean to business men when the railroads are compelled to economize in every possible way, the figures herewith are significant. They give the comparative gross sales for 1913 and 1914 of several of the leading concerns which deal in railway equipment:

, 1			
Baldwin Locomotive Canadian Car & Fdry. Am., Steel Foundries Pressed Steel Car New York Air Brake Am. Locomotive Am. Docomotive G. Brill Co Bailway Steel Spring	11,125,091 13,375,090 2,915,932 29,987,438 4,903,510 4,351,465	27,000,000 17,425,940 30,967,360 3,244,312 54,868,175 9,154,433 7,688,185	Decrease \$24,014,806 15,900,000 6,300,849 17,592,270 328,380 24,880,737 4,250,923 3,336,720
	,,,,,,,,,,,,,	\$187,979,374	\$96,604,685





H. S. Three Fluted Drill

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Does anyone suppose that the falling off of more than \$96,000,000 in a single year was felt nowhere outside of railroad circles? Any regulation which prevents the railroads from earning a profit—which seems to have been the ultimate object of most recent rulings—is pretty sure as well to prevent a lot of other people from earning profits."

There are a great number of large concerns who sell all or a great part of their product to railroads and the thousands of men employed by these institutions must necessarily suffer when the railroads stop or curtail their purchases. These facts are worthy of careful consideration by every business man, whether or not he deals with the railroads.

AVA

"Industry is more than a process, even more than an art of making good and beautiful things; it is an art of life. Its inevitable product is some sort of human character. As an art it should aspire, as all other arts do, to simplicity, skill, obedience to form and method, to symmetry and elegance; aspire to be a recreating as well as an expending of energy, a life beautiful and pleasurable in itself, as well as disciplinary and utilitarian. A business organization should be conceived of as a real standing-together of a company of brothers to take care of each other, and enjoy a portion of their lives together."

-Edward D. Jones in "The Engineering Magazine."

Page Six



EEST thou a man who wears the confident look of a winner he shall succeed, for of such is the camp of the victor. Didst ever meet a man who left you with a dull, tired feeling and didst stay with him long enough to get the true peanut perspective of the pessimist? Yes, we have all met the fellow who mines and blows up our cheeriest viewpoints indiscriminately, and after the first encounter we avoid him. And quite naturally!

Cynical Charlie called upon us last week to sell us a bill of goods; that is, he apparently came for that purpose, for selling is his line. But he did not land an order, for instead of talking business he injected himself into the proposition and took a jab at everything but inspiring us

to buy.

War, politics and whatnot were shot to pieces by him most unmercifully, and, while we viewed the holocaust with alarm, he sneeringly asked what we were going to do about it. We, of course, did not know and he did

not give us an answer to the problem. If he had it concealed about his person it was not divulged and his call was a decided failure for all concerned.

Yet, not more than ten minutes after he had called, a real, live Salesman, and one of Charlie's strongest com-









H. S. Straight Shank Drill



PARADOX REAM

ARADOX" REAMERS ARE ADJUSTABLE, 🖫 HENCE THE NAME. MOST REAMERS ADJUSTABLE OR SOLID AND THUS LIMIT PARTICULAR MERITS OF THEIR TYPE. DOX" COMBINES THE ADVANTAGES OF BOTH THEREBY EFFECTS A LARGE SAVING IN TOOL THE "PARADOX" ADJUSTABLE REAMER IS EN FERENT FROM OTHER ADJUSTABLE TOOLS. BE PUT OUT OF ADJUSTMENT BY SIMPLY TO ADJUSTING NUT. THE "PARADOX" IS SO CO THAT IT IS NECESSARY TO REMOVE THE BL THEIR GROOVES IN ORDER EITHER TO INCRES CREASE THE SIZE OF THE REAMER. TINFOIL USED IN THE GROOVES AND ADJUSTMENTS CI RANGING FROM .0005 TO 32 OF AN INCH-ON EVEN MORE.

THE BLADES ARE SCREWED FIRMLY TO THEIR DOWN AND IN AGAINST THE BACK AND BOT GROOVES SO AS TO HAVE THE GREATEST RIGID! HEADED SCREWS ARE USED, ONE OF THEM PLACE THE CUTTINO END AS POSSIBLE WHERE FIRM MOST NEEDED. THE BLADES ARE UNEVENLY PREVENT CHATTERING; THEY CANNOT SPRINARE PRACTICALLY SOLID WITH THE BODY AND REAM A CLEAN AND ABSOLUTELY ACCURATE

THE CLEVELAND TWIST DRILL COM-

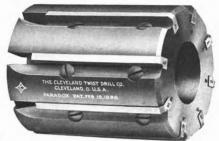
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RET SOLID— RE EITHER ED TO THE FHE "PARA-TYLES AND TYPENSE.

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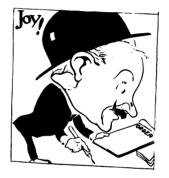
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H. S. Oil Tube Drill

petitors, called and talked up his line like a woman at a telephone when she knows it's a party line. Why, he became so enthusiastic and was so full of vim and energy that we caught his contagious spirit and gave him an order almost before we knew it!

And how we wished that Cynical Charlie could have been there to hear him! He talked like a winner and there was no sign of the quitter about him. Good, strong logic, straight from the shoulder, and the kind we old-fashioned folks like to hear, because it does the heart good and carries real sunshine.



For he was a man who could visualize and see the sun before it came over the hill, and knew that it was bound to rise in spite of itself. And he was up and doing before it did. That is why he was making sales when others were making things worse than they really are.

The second of th

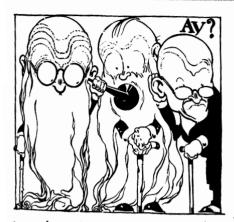
The world hates a quitter and it is time we Bucked Up and kicked out the gloom dispensers!

"One of the first undertakings of the Federal Trade Commission will be to require more efficient systems of cost accounting by manufacturing corporations which come under its jurisdiction. Members of the commission believe the system of accounting in most instances is not minute enough to show the actual net cost of each article manufactured. As one of the methods of encouraging American manufacturers to enter foreign fields which have been opened by the war, the commission purposes to enforce a closer system of keeping costs. The commission has authority to require corporations to make annual and special reports and to specify the form in which these reports shall be made," etc., etc.

(News item in Chicago Tribune, April 13)

This opens up a field of wonderful possibilities. After they get our cost systems running smoothly, they can tackle our production problems, our sales methods and our advertising campaigns. After these things have the knots taken out of them there are the old questions about how many grandmothers an office boy can have and the relative stenographic efficiency of blondes and brunettes. Let's get these things settled while the getting is good.

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(Continued from Page Two)

shivering bosom to buy advertising space in order to publicly deprecate his product and apologize for the weak points in his line. He needn't even mention the weak points for the buyer will find them out anyhow and he can then explain them away without looking extra foolish about it.

Advertising, to be efficient, must contain a reasonable degree of truth, however painful

it may be and morever it should be presented in a sufficiently modest and logical way so that it may inspire some interest and confidence instead of the snickering pish tushes of a highly skeptical public. For instance, it would be a simple matter to look up all the superlatives in the book, apply them to Cleveland tools and let it go at that. If some red-eared chucklebean away off in the Carpathian trenches should read and believe the sad stuff, even he would think that at least we weren't gentlemen for talking so boisterously and likely as not he'd look all over Helngon in order to buy his tools somewhere else.

As intimated up yonder, we could lay hold of all the tin-panny bromides about super-excellent quality but we'd rather tell you something with a meaning all its own. For example and to wit: we can buy steel from which good drills can be made and are made and we can buy the said same steel for 25% less money than we pay for what we're using. Chemical analysis would show it contained



just about the same properties and in about the same proportions. Apparently it would be as innocent of treachery as a banana peel on a cement sidewalk. Why don't we buy it? Because it isn't made to our standards. Because it isn't rolled and treated at the mill with the scientific precision that we require. Because a microscopic examination would often show inferior structure. Because it wouldn't stand the hardening and



tempering heats used in our factory. Because it couldn't pass the severe physical tests that every lot of Cleveland tools must undergo. In short, because we couldn't stand back of it with the full assurance of satisfactory service that has always gone with the Cleveland name and trade-mark.

For absolute uniformity and full compliance with the standards set by our metallurgical department, we pay the additional 25% and it would be cheap at twice the price. By taking and paying for these precautions at the outset we effect an economy in the end. We protect ourselves from tools coming back. We insure the tools and thus assure ourselves of the satisfaction of the buyer.



Page Twelve

If that isn't worth the extra percent, then we've got the whole business figured out wrong, and we'll have to make the worst of it.

But getting back to our story and our own private ideas of advertising, we want to venture the idle thought of an idle fellow that the dear public would rather hear something about why, how and what for than the good old bushy bombast and the more or less glittering, tittering generalities.



(Continued from last month)

In the manufacture of tool steel products on a large scale, there is opportuni at every turn for defects to creep into the steel and all unseen by the ordinary eye remain to undo the work of the most skilled mechanics. The microscope has been shown to be by far the most useful means of tracing the hidden flaws to their true source. It also in many cases points out the culor the means of eliminating the harmful condition. Defects in tool steel me be divided into three classes:—

- Defects which originate in the casting and hot working operations of the steel mill.
- (2) Defects resulting from annealing.
- (3) Defects resulting from hardening.

In the mill the first structural defect which may occur in tool steel is the formation of a pipe or shrinkage cavity in the center of the ingot. This pipe may be closed over at the top of the ingot and so not being discovered rolled down to the finished bar. In the absence of proper inspection it may ever progress as far as the hardening operation unsuspected. There it makes its presence known by splitting the tool open along its entire length as soon as it is cooled in the quenching bath.

Laps, seams and bursts are other defects caused in the mill and are usually visible to the naked eye. Fig. 9 shows a slight seam which has become a

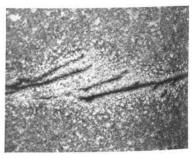
still more serious defect through decarbonization.

Segregation of the carbon is a defect which occurs in the mill either by prolonged soaking in the reheating furnaces or insufficient hot work. The carbon in the form of cementite instead of being uniformly distributed through the steel becomes collected in large groups or masses. These masses as the steel is rolled out in the form of bars are drawn into long streaks or strings which

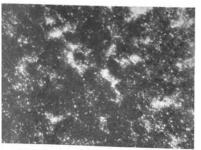
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are a serious form of weakness in the steel. Fig. 10 is a cross section of a bar showing this segregation. Fig. 11 is a longitudinal section.

Too high temperature of finishing under the rolls or hammers may leave the steel in too coarse a condition to be refined by any ordinary annealing or hardening methods. This is one of the commonest of defects in steel as it comes from the mill. Steel in this condition, (Fig. 12) will harden with a coarse crystalline fracture and be liable to firecrack.



The annealing of tool steel is sometimes done by the mill and sometimes by the tool manufacturer, so the defects due to it will be considered separately. Tool



steel as it comes to the annealer is usually in the condition shown in Fig. 6. It is necessary that this network be broken up and the steel reduced to a fine uniform structure, as is shown in Fig. 7. (See April issue "Drill Chips.")

If the heat is not sufficiently high or if the time is not long enough the coarse structure will be incompletely broken up with a result like Fig. 13. This would make a tool very likely to chip and of poor wearing quality.

A very serious defect which is sometimes

caused by annealing is the formation of graphitic carbon. (Fig. 14.) In this condition which is produced by prolonged annealing at low temperatures the carbon is thrown entirely out of combination with the iron and assumes the form of graphite.

When this change has taken place the tool steel is no longer steel but a very excellent grade of cast iron. Fig. 15 shows for comparison the structure of ordinary cylinder iron. In many cases the precipitation of graphite is not as complete as this, only a portion of

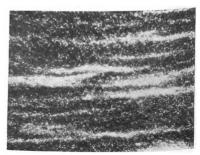


Fig. 11-100 Diameter

Page Fourteen

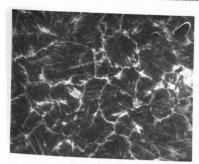


Fig. 12-100 Diameters

In considering the defects which due to hardening, we should not fo too often the hardener gets the blan the mistakes which may have been the steel before he gets it. The most

the carbon being thrown out of comb

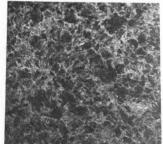
in the example of Fig. 16.

defect due to hardening is overheat. piece of perfectly annealed steel is ove the coarse crystalline structure which mill has gone to such great trouble to bre

again given a chance to grow. The larger this structure is allowed to because greater damage is done to the steel. A few minutes' carelessness by a l

may thus undo many days' work of a careful steelmaker. Under heat in hardening of course results in a soft tool with little change of structure. Uneven heating and heating for too short time result in uneven hardening with great danger of firecracking. Heating for too short or too long a time may also cause distortion of the tool.

One of the commonest defects in tool steel has not been classified above because it may occur at any time the steel is heated above its critical point. This is the decarbonization of the exposed surface which is commonly known as the bark or skin on tool steel. (Fig. 17.



defect is present to a greater or less extent tool steel and must be removed by machini is caused by the exposure of the steel to t or other oxidizing conditions while heated high temperature. The result is the rea of the carbon from the surface and often trating to a considerable depth. For exe in a 1.25% carbon steel, the cross se of which is shown, the outside of the has been reduced to pure iron. Below this

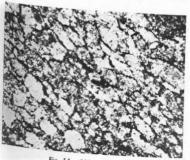


Fig. 14-100 Diameters

of steel of low carbon, then a band of steel ut .80% carbon, then the 1.25% carbon interior. This bark or decarbonized surnot completely removed will result in soft and poor cutting qualities in the hardened

ese structural defects are with a few excepnot visible to the naked eye, yet upon their sful prevention depends the quality of the

A finished tool containing such a defect be likened to a bridge, which perfect in

other detail, is built upon an unsafe pier. The entire structure may be instantly yed through the failure of a single member.

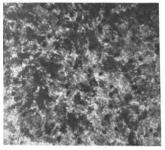


Fig. 16-100 Diameters

In the production of finished tools on a large scale, the most constant vigilance is necessary in both inspection of raw material and regulation of heat treatment to insure that none but tools with a perfect structure may reach the customer.

Even those who make and temper a few tools for their own use, find that inspection of the raw material and regulation of their heat treatments repays many times its cost in the production of tools of increased efficiency.

e increased use of the pyrometer in regulating the temperatures of heating has of immense value in promoting greater ac-

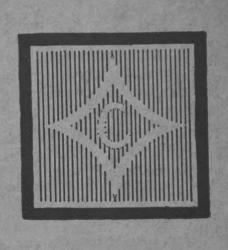
) and uniformity.

ne introduction of the microscope for the inon of steel and for research will result in greater improvement. A finished drill or or bears no indication on its surface of its ng quality. But by the stern test of cheminalysis and under the searching eye of the scope its secrets stand revealed.



Fig. 17-100 Diameter

TO be honest, to be kind, to earn a little and to spend a little less, to make upon the whole a family happier for his presence, to renounce when that shall be necessary and not be embittered, to keep a few friends but these without capitulation; above all, on the same grim condition to keep friends with himself; here is a task for all that a man has of fortitude and delicacy. —Robert Louis Stevenson.



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DRILL CHIPS



FOR JUNE

CO-OPERATION
is the mightiest
mandate that God ever
sent thundering thru
this universe.



THE CLEVELAND TWIST DRILL CO. JUNE • NINETEEN • FIFTEEN

Andrew Eadie, Editor

CO-OPERATION

ENTLEMEN, Men and Anti-Suffs:
Let us sit up and think.
How long can we stand for these fiddling fussers who call themselves our leaders? How much longer can we stand for the guff, the bluster and the specious spiffle that we've been permitting? In short, when, if ever, will we graduate from the Venerable Order of Goats?

This struggling world, torn with avarice and internal dissension, never stood in such vital need of *real leaders*.

Glance around you today, over the transom or thru the keyhole, and what do you see? Nothing, friends, but the chaotic mess these bumptious bunglers have made of every country in the world.

Where is the peace that was to be guaranteed when militant monarchs were sweating and taxing the innocent people of the world for brutal and bigger armies and navies? And the "International Solidarity of Labor" that unctuous and archaic parasites

in their little skull caps preached to us from Labor's platform. Who has gone and buried that?

What do you think of the washed and polished diplo-



mats with their sterling silver trimmings and their electric gear shifts whose "diplomacy" ends in the wholesale butchery of blameless men in spite of all their culture and their international marriages and their bowing and scraping and handkissing at the courts of St. Vitus and the courts of St. Whatnot?

And what do you think of the Leadership and Spiritual Power of the churches when millions of men with their jangling swords and their shining rifles can all kneel and pray to the same God for gory conquest over one another, and get away with it in spite of God's iron injunction: "Thou shalt not kill?"

Further, and while we're about it, let us ponder on the "works" of our own political "leaders." Not the Democrats, or the Republicans or Socialists or the grape juice



drinkers, but the whole collective exhibit. Yesterday you saw them adjusting their eyeglasses, hitching up their trousers, girding their corsets and

Page Two



00

talking big from the chest out, about "busting the trusts." But what trusts have they busted? What trust have they even bent or dented or nicked? Not one. And so today, on

this glad and glorious summer morning, you find that instead of busting Trusts you have been trusting Busts. You've accepted all this big-chest talk for Truth, and subscribed to the ant-blown, political economy of spineless purveyors of the petty, who mistake cause for effect and use up God's precious days fussing with foolish hobbies when vital, pressing problems are here to be solved.

You've allowed industry—the brains and backbone of this nation—to be hampered and hindered by a hypocritical band of economic light-weights and political jassacks who ride into office on your ignorance and indifference and then in heavy-browed solemnity put both feet on the basso profundo pedals and pull the old trust busting stops just to fuddle and befool you. Don't you suppose that

these mealy-mouthed two-spots know down in the bottom of their shallow domes that the Trust is here to stay and that no political hokus-pokus on earth can disintegrate it?





No.

H. S. Taper Shank Drill Of course they know it. So do the trusts know it. The only ones who don't know it are our heavy, complacent selves who delegate our thinking to these "Leaders."

Now as suggested a couple of times back yonder, let us use our God-given brains and think. If we've got any better thinking apparatus than a fried smelt, we'll stop sitting around like a lot of nincompoops and use our nice round heads for something besides hat racks.

Why this ghastly and destructive farce of leadership around the world anyway? Why can't we have leaders who can lead and big men who can be big when God gives them the chance? Why do Charity organizations oppose laws for charity, and churches that are out to save souls denounce other churches that are out to save souls? Why do Leaders of Labor fight other Leaders of Labor and statesmen pummel other statesmen over measures for the common Good?

In short, why is it that when the show-down comes, not one leader out of ten thousand—or truer still, not one in a hundred thousand—has the vision of a cucumber or the back-bone of a

custard pudding?

Country-men, and millionaires from Pittsgrad, this is why.

It's because not a man-jack of these tin chieftains has risen in Spiritual Understanding to a plane of



consciousness where he can perceive thru his tortoise rimmed spectacles the Divine Principle of Co-operation working thruout the Universe. Spiritual Understanding means Spiritual Power and Unselfishness and it is this alone that can hold men's eyes on the goal and make them Think Big and Act Big in great crises.

Because our church leaders lack it, they form themselves into little scrapping pale-faced cliques that lose sight of Christianity's great purpose thru pica-

yune squabbles over pin-points of dogma.

Because our statesmen lack it, they align themselves with sordid political parties under meaningless names, and flaunt foolish flags, and march with tin hats, and beg, bribe and bully other men into working for Party Power instead of working for the Common Good.

And because we ourselves lack it, we calmly lockstep behind these dense fellows and block the way to growth and happiness for ourselves, our families and our fellow-men. The pity of it, friends: the pity of it all!

Co-operation is a Cosmic Law—a Divine Injunction. It is the mightiest mandate that God

ever sent thundering down the dusty corridors of this Universe.

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Competition is Colossal Human Ignorance opposing the Cosmic Law of Co-operation.

All planetary action commenced and con-









tinues in obedience to the Law of Co-operation. All human evolution commenced and continues in obedience to it. All that has been stored up of value to the race has come thru Co-operation. All the wild, wanton waste that the world has suffered,

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and all the tears and terrors, and curses and blood that have trailed in its wake, are the result of lack of Co-operation—blind and ignorant disobedience to Divine Law.

Now let's do a little more thinking. Let's quit this scratching around the garbage heap of petty effects like a flock of barnyard fowls. Let's stand up, in our vain-glorious Hartschaffnermarx and do some little brain work on causes.

Since there's no especial hurry, let's start back at the time when nothing existed in our little old solar system but that one ultimate substance that physical science politely and naively terms "ether." With our dull finite minds, we can't go much further back

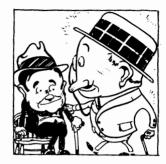
without taking up quarters in the drivelling ward.

This "ether," consisting of excessively small tit-bits called "etheric particles" was equally distributed thruout Space. All the particles were static, or some other funny word, that means they had



about as much motion as a cigar store Indian.

Whatset them in motion? They could not set themselves in motion because they were in equilibrium; they had no self-starters and the editor of Drill Chips, who is next to all this stuff, was then in parts unknown. No particle



had greater power than any other particle and in short they were all standing around with nothing to do and all dressed up with no place to go. They could not originate motion. Something outside of them must have set them in motion.

This "something" that did the job goes by various names, and over these names many highly efficient and edifying feuds have been launched.

Some people call this "something" the "Spirit." Some call it "Universal Energy," some "Infinite Will," some "First Cause," some "Love," some "Thought" and so on down the full list of aliases. The writer prefers to call it God and those objecting may leave the room through the exit at the rear. God originated motion.



Now then we ask ourselves what was the nature of this motion and without an instant's delay, we reply to ourselves emphatically: It Was Co-operative.

Look it over calmly. First we had etheric particles getting together and co-operating into groups called atoms.



H. S. Straight Shank



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W MANY HOLES?

EVELAND" DRILLS AND REAMERS ARE NOT PERFECT. THEY DO NOT REPRESENT THE MATE ALWAYS WE ARE GOING FORWARD, NOVING OUR PRODUCT FROM YEAR TO YEAR AN UNTIRING EFFORT TO APPROACH A CON-ON OF ABSOLUTE EXCELLENCE. FORTY YEARS EXPERIMENTS, OF GROWTH, OF EXPERIENCE) REAL DEVELOPMENT ARE NOT WITHOUT NEFICIAL CONTRIBUTION TO OUR PRODUCT. ONLY TEST OF MERIT THAT CAN BE AP-D TO DRILLS AND REAMERS IS: HOW MANY ES CAN THEY PRODUCE AND FINISH BE-EN GRINDINGS AND DURING THE LIFE OF TOOL? MANY OF OUR CUSTOMERS TELL US IT CLEVELAND DRILLS AND REAMERS CON-ENTLY GIVE MORE HOLES PER DOLLAR THAN ANY OTHER SIMILAR TOOLS.



CLEVELAND
RIH JEFFERSON STREET

NEW YORK: 30 READE STREET



Then a good many millions of these atoms getting together cooperatively formed this world. Likewise other planets and the myriad of stars, and in fact, everything that we know as creation.

Let us take a look to see how nations came into existence. First, as we said up-page, there were the etheric particles, otherwise known as electrons. These electrons acting co-operatively formed atoms, as advertised. Then the atoms acting co-operatively formed molecules. The molecules acting co-operatively formed protoplasts. The protoplasts acting co-operatively, in time formed primitive humans. Then for co-operative purposes came the family. The next step is the co-operative actions of families forming tribes. After that a number of tribes, through co-operation and its attendant benefits, came to form the clan. And a number of clans seeing the advantages of more thorough co-operation united and formed the nation. After that what? All the nations coming to ponder on the co-operative stunts staged by their predecessors came to form The World's Federation. Will they? Yes. Certainly, absolutely and inevitably. That is the next step. It is the will of Omnipotence. It is written in the stars.

Let us take a look to see how Big Business came into existence. First, there was the cramped and crabbed individual toiling away with his roughly fashioned hand tools in his little dark and dusty

corner. Then some enterprising genius trotted in with a machine that would do the same work only do it better, more quickly and more efficiently. Then for the sake of Cooperation there were a number of these machines grouped together doing more and more work and betterwork. In time, these groups of machines were called factories aud the factories, by combining and co-operating



one with another formed the trust—at which in our foolish excitement we have been so eager to hurl anathema, mud and other things not found in polite society. But in spite of this and our feeble, inane protests, all the trusts combined and formed one great World Trust. This is just as certain as what we said about the World Federation. It is divine law. It is the iron law of evolution and moreover it is likewise written in the stars.

All this co-operative action among electrons, atoms, planets, men, etc., was brought on by the urge of the divine or cosmic spirit of co-operation acting thru mind and then upon and thru matter. Big Business is here, not because Rockefeller, Carnegie, Harriman or other celebrated humorists were born. Big Business is here because evolution was born. And it is stupid and silly for us to blame any little bald-headed egotist, who happens to be one of a hundred thousand avenues through which a great superhuman plan is being slowly and painfully worked out. Many of these so-called Captains of Industry and First Mates of Big Business are unconscious of what they are doing. For they merely happen to be tools selected for the working out of a plan that was all laid out in the blue-prints of the cosmic engineering department millions of years before they were born. And so friends, for us to lay up our wrath against any of these eminent gentlemen argues for either ignorance or malice, both of which are superinduced by coagulated sea weed on the cerebellum.

Now people, let us see if we cannot locate a definite trend in all im-



portant invention. Let us see if there is not a tendency to send this joyous race further along toward solidarity—Universal Co-operation. Co-operation consists in getting the other fellow's view-point. We must talk to him, know him and understand him. We must come into a realization that he is the same as we are, that his interests and ours are identical and that to injure him is to injure ourselves and to help him is to help ourselves.

In the good old days of the camel, the elephant, the ass, and the ox as means of transportation and intercommunication, Co-operation was no summer evening cinch. In the good old days of Columbus and his rolling caravel, distant countries could sometimes exchange one idea in six or seven months' time and sometimes they couldn't exchange their little old idea at all, at all. Then came the successive steps—the stage coach, the steam engine, the electric railway and the Ford, in order to bring people together. Along about the same time and hand in hand, came the printing presses, telegraph, telephone and wireless in order to bring ideas together. Various countries were brought closer together by the steamship and then the fast turbine, and the ideas of all countries were brought together by cable and wireless. Each step was more efficient than the one preceding it. And now comes the airship, destined to undergo great development and in time to bring in still closer contact, all ideas and all people. This is its purpose, just as there existed the same purpose in all other inventions.

As a further prediction, the time will come in the course of human unfoldment when mind will communicate with mind direct. There will not be any dinky mechanical contrivance in between. But to save ourselves from the tittering and laughter we begin to hear in the back of the room, we will not set down any further facts in this direction. Only yesterday it was that Bell was called spooly because he said he could send a human voice along a wire. Had he said that he could send a human voice many

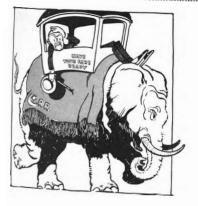


Page Twelve

miles without any old wire, his kind friends would have shaken their heads in sympathy and led him along to a nice little room with upholstered walls and floors where there were no things lying around loose.

YAV

Now, of course, some one is going to trot in and say that he doesn't see much "Co-operation" in the Industrial World today and that as far as the International Situation is concerned,



Co-operation is blissfully rusting away in the cannery, just because several nations are rolling over one another in the dust like bristly-backed dogs over a bone.

The party who says these things is running his Faculty of Observation on half-time when it isn't closed on account of inventory. He doesn't see—because he doesn't look—that thru all history Co-operation in all departments of human activity has always been preceded by Competition and that the fiercer this competition becomes, the nearer Co-operation comes;

that competition, by its very nature, never can be anything else than "Co-operation-in-the-making," "combination-in-embryo;" that the very things that are against it are really working for it; and that by the dictum of Omnipotence, this race has got to co-operate whether it thinks it wants to or not.

In the good old cave days, to which some political economists expect us to return, families used to go out and beat up one another with big knotted clubs. But in time they found it was a losing game all around and then they got together in tribes and co-operated. In their turn the tribes went out and beat up other tribes until they learned to combine into clans for mutual advantage and protection. Then

mutual advantage and protection. Then the clans sallied forth with a lot of cheap bravado and waged war against one another; but out of their competitive struggles they also learned the lesson of Co-operation and formed themselves into Nations. And now the nations, thru this fiercest of all competitive butchery, are to learn the biggest of all co-operative lessons, and as soon as it is learned, and well learned as it certainly will be, you will see the World Federation.

Competition preceding Co-operation at each successive step of the long



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weary way—and all because of Ignorance.

Likewise this fierce and foolish fight that is being waged against Big Business today, and the silly efforts of those who think we can take hold of Industry like a cab-horse and back it into the Competitive Stage again, is all just a pleasing little forerunner of Co-operation on a big scale in the world of Industry.

Only thru opposition to Divine Law do we come to know Divine Law, just as the equally stupid child comes to know a little something about fire by sticking its fingers into the flames.

Only thru the titanic struggle in Europe today will the Nations come to realize t they must co-operate for their mutual good. Only thru the present fight on Business in this country will the eyes of the people be opened to the utility necessity and inevitability of Big Business to supply adequately and economly the needs of the Nation and the World.

They will come to see that Competition spells inefficiency, waste, inferior vice, bitterness; and that Big Business, which is simply the co-operation of usands of individuals in the production of human commodities without friction

waste, and at a minimum cost of producn, spells economy, efficiency, cleanliness, nd will.

They will come to see that Competition Industrial Anarchy. "Anarchy" means ithout government." Competitive indusses produce without government. They have governing head. In the matter of protion each attempts to be a law unto itself. goes ahead and produces irrespective of production of others. It does not know I doesn't care how much or how little the iers are producing. And so the first thing



you know, we have "over-production" which means glutted markets, punctured payrolls, bankruptcy barbecues, panic, poverty and pauperism. Nobody ever heard of "over-production of oil" since Big Business took hold of the productive and distributive ends of that commodity.

Now, if co-operation is a divine dictum, as we said backaways, why must it always be preceded by strife and suffering and loss at every step of the way?

Tersely let us state it once more.

It's because we are a stupid inch-browed race, thoughtlessly, following "Leaders" who have eyes that see not, ears that hear and nice flat heads that think not—who quibble over effects instead of search our causes—who have not risen in spiritual understanding to a plane where becomes conscious of the universal law of co-operation, sees it operating thruthe Cosmos, catches the spirit of it, and works with it instead of against it.

In short, it is because our leaders in Industry, Labor, Church and State are wiser than the led. They cannot see that the whole race, irrespective of co creed, style of mustachios, or wife's maiden name is one—that the objective



human evolution is unity—solidarity—that Law of Brotherhood, the Law of Love is greatest Law in this Universe; that to know a obey it is Heaven and that to oppose it Hell.

But let us take courage.

A new order is arising that shall dema a new leadership—a real leadership. The earth-wide "spiritual unrest" is but the fricticaused by the subconscious recognition of the Law of Brotherhood pushing for expression against the slow-apprehending conscious min of men.



Page Fife

nition is the first requisite for cure. The race is beginning to recognize the its laws and the foolishness of its leaders, and slowly but surely it is formulemand—a growing portentous, earth-rocking demand. And that demand Eexpression, for Life, Love and Happiness more abundant and woe to those d in its way when it is once uttered.

rrow around the world you are going to see arising here and there and everyit of Industry and Church and State, men of tremendous earnestness, with
at shall ring round this earth. Something within you will recognize the look
standing in the eyes of these men, and the tone of authority in their voices
will believe in them and follow them. They will be men who cannot be
ullied or cajoled, whose courage will be mighty, whose vision will be universal
ood and not the brotherhood of a party, sect, society or a nation.

will be the new leaders of the new order. They will voice this burning race and guide these seething souls into happy, orderly expression. For they will nto whose minds has been born the *Christ-consciousness*—the consciousness *teness* of life, the brotherhood of man and the great loving fatherhood of *God.* adership which is less than that, must perish from this earth.



THE BRITTON PRINTING CO CLEVELAND

COMPETITION
is Colossal Human
Ignorance opposing the
Cosmic Law of
Co-operation.



FOR JULY

DiPLOMACY is the peculiar ability to tell a nation, successfully and seriously, that it isn't possible that it has done what it has done, but that, if it is possible that it does it again, then, by heck, it will be impossible to pretend that it hasn't.



UNIVERSITY OF ILLINOIS LIE

Andrew Eadie, Editor

JUL 1 3 1915

"And now we come," the walrus said,
"To speak of many things—
Of shoes and ships and sealing wax
And cabbages and kings."

E wonder why such a notorious industry as the king business, with its nervous armies and excitable battleships, needed press-agenting by a walrus. And we would fain ask why, or we would just as soon ask why, omitting the fain fixture and deducting at list. Maybe it was to save kinging from becoming a lost art and going down to the demnition bow-wows.

But all that is another funny tale having nothing to do with this sad story, and the only reason for dragging in the quotation is because we also have divers things to record.

Sundry diplomatic notes have been received by the Drillchip Marconi station some of these lambasting your editor as a radical and reactionary anarchist, while others attach the stigma of moss-covered

conservatism. Not wishing to violate any of the traditions, we have called together our editorial cabinet. It should be explained here that one of our number by reason of an uncontrollable proclivity for tossing monkey wrenches in the wheels of progress, was summarily derricked (high brow for "canned"). After expressing due astonishment upon receipt of his resignation, just like they do in the inner circles, we have resolved to depart from the established precedent and tell the plain truth. Which is this: The Cleveland Twist Drill Company, being a duly licensed and incorporated institution, etc., etc., hereby assume full responsibility for all advertising matter appearing in Drill Chips. They guarantee its accuracy. Outside of this they qualify their endorsement, sometimes even going so far as to hold different views from the editor. For instance, impossible as it may seem, the opinion herein set forth on the Suffrage question is not unanimously approved by the management and the board of directors. This is regrettable but it is cruelly true.

Last month we took up the weighty subject of Co-operation versus Competition and bandied it about with a rather unconventional frivolity. Now we have no private animosity toward the cause or theory of Competition and in fact we can think of several nice things to say in its behalf.

For example: when a man has no competition he sells his stuff as close



to the line as he thinks he can and he is always staring ruin in the face with a glassy eye and a shivering spine. When friend Competition arrives on the harrowing scene he cuts

prices and cuts them again and the following year buys a Packard limousine. When a railroad scowls at you with a cold and haughty look in its eye and says that it will carry your old freight as a favor, providing it doesn't occur again, you may be sure there is no competitor in the offing. When the gas company installs one of their dissolute and spendthrift meters, charges you \$19.00 for gas during the month you were away, and then tells you to close the door gently as you go out of the manager's office, it's a cinch that there is no ruinous competition hiding around the corner. When an ice company hikes up the ante 100 per cent at a crack on account of the scarcity of water during the previous winter, it's a sign that some one has punctured Competition in a vital spot.

Not long since, the express companies felt

that they were being cheated if they carried a parcel at less than twice its value, and even then on account of the high cost of dividends they had no money left to deliver outside of the





H. S. Taper Shank



And flagged with her eye a passing jay

business section. Since the advent of the parcel post competitor, if you take a package in to an express office the manager will shed copious tears of bitter sorrow all over your palpitating

bosom because he wasn't allowed to send for it. We feel that we have done justice to this subject and for a long time we've been thinking that the question of socialism should have a thoro going over. So far we haven't been able to get much accurate information on the topic, altho we have been reading up a lot of good authorities like Robert W. Chambers, Laura Jean Libbey and Ella Wheeler Wilcox. In that deathless volume, "Poems in Passing," Miss Wilcox does not publish the immortal sonnet given below, which we believe has a strong undertow of socialism or something—

The woman was young, with a heart atune To the balm of May and the breath of June; Her strength was the strength of a sacred fire That flushed her cheek with a mad desire To do some dreadful, naughty thing In the market place—to have her fling. So she sallied forth adown Broadway And flagged with her eyes a passing jay; And she drug him in where the flagons froth And held him up for quaff on quaff.

(Business of meditating.)

Do we blame the maid? Ah, no; ah, nix; She was only up to the hoyden tricks Of youth's heyday, the spring of love; That'll be about all—don't shove, don't shove! Maybe this doesn't treat the issue of socialism very comprehensively. We don't know, and yet so far there is but little enlightenment we can yadd. We attended a church social once and somebody spilled cof-



Altinian de secentia de la companya de la companya

Socialism-O. K.

fee on our boiled shirt. Said shirt we had worn to seven lodge meetings and one spelling bee and never had to wash it once till we went to that social. So we may be prejudiced, and justly so, against socialism.

But we shall see, we shall see.

Just one thing more and we have done. The factory of The Cleveland Twist Drill Co. will be closed for the first two weeks in July in accordance with our custom. This is for the double purpose of taking our annual inventory and giving our factory force a period for recreation. Some of our kind friends may think the editor needs a vacation also in order to reflect on the real meaning



Socialism-N. G.

and purpose of life. Last year we did some tall reflecting at one of those places called a summer hotel. A summer hotel, dear people, is a Grecian barn in disguise with the makeup showing through in spots. It has the Geo.



No.



H. S. Three Fluted Drill

Washington period plumbing and Paleolithic mattresses. The waitresses, one to each twenty inmates, are graduates from the local brick factory, who are waitressing merely for pleasure—theirs, not yours. The true summer hotel faces



an automobile stable on the north, picturesque bill-boards on the south, a goat pasture on the west and a boiler factory on the east. consist of evaporated fruit, tinned milk, storage eggs, and salt pork with a broken down hack-driver for chef. The interesting diversions are one squad of frigid, hammer-wielding old dames, and four families with seven children, who, for perpetual revolution and anarchy, have Mexico backed into a corner and

looking like a rank amateur.

Under such circumstances our reflections are profuse to the point of lavishness and we would gladly particularize were it not for the somewhat stringent postal regulations.





EVER in the whole checkered career of this low-browed universe has there been a new thing or a new thought that wasn't first baptised with the fire of bitter criticism. Righteous and worthy citizens hooted Columbus for his theory on the shape and shapeliness of Mother Earth. Galileo took a compulsory vacation in the local jail for preaching that the earth revolved. Fulton was a reactionary fool and Franklin was ditto, only more so. Telephones, Roentgen Rays, aeroplanes, automobiles and motorcycles with bathtub attachments—all these were impossible according to the tight-laced standpatters whose chief concern from time immemorial, was to screw down the brakes on the wheels of evolution.

Everything new has always been wrong. Where it concerned women, it was not only wrong but it imperiled her delicacy and womanliness; it was a menace to sound government, it threatened the sanctity of marriage and the morality of the home. In the hypocritical piety of some years ago, anything higher than elementary education for women was "unsexing." Later, females practicing medicine thereby degraded themselves and debased their sex. Still later, women's clubs were adjudged dangerous for, as it was pointed out, they would disrupt home life. And now, in the prating cant of 1915, the enemies of woman suffrage rise up in their guaranteed Holeproof and with profound solemnity proclaim that "woman's place is the home;" "that women are mentally and temperamentally unfit for political activity;" that they are incapable through



No 417



H. S. Straight Shank

GROWTH-AN



During our forty years been in our institution change. "Cleveland" too growth—a development ments that have gone been" are but guide pot that will be." The call

necessitates drills and ream better service—in other grindings and more holes More holes per dollar

and the labor using it;

THE CLEVELAND

CL

CHICAGO: 9 NORTH JEFFERSO

ND ITS CAUSE

a radical or revolutionary s to-day represent a steady rom experiences and experiefore. "Things that have s on the road to "things for increased production as that will give greater and ords, more holes between before the tool is scrapped.

wested in the drill itself this is our constant aim.



AND

I. NEW YORK: 30 READE ST.





No. 126



H. S. Oil Tube Dril! lack of experience in public affairs." Now isn't this the same brand of suffering sophistry that we've encountered all the way down from the Stone Age?

Let us give these arguments the once over and see if they will stand without crutches. In the first place that trusty phrase, "woman's place is the home"—here we have a doddering and dusty antiquity that is afflicted with pernicious senility. Dost remember that spring morning when Eve went out gunning in the apple orchard? Well, when she got back and told Adam about the fine picking, he was much wrothed, and impatiently tossing aside his expensive cigarette, he said—what did he say? "Woman's place is the home," to be sure. So thus we see, people, it is old stuff and maybe it wasn't so far wrong at that, in the past and forgotten days when man supported his women folk. Since then, however, there has been a social and industrial upheaval, as even some of the anti-suffragists must have heard. Said upheaval has thrown nine million women in this country out of the home and into industry. Does this fact make any difference to the proud, self-sufficient male who throws out his chest and asserts: "Woman's place is the home"? Not a bit of it for he has eyes that see not, ears that hear not and feet that track not. And what of the further



fact that most of these nine million women sew incredible hours in tenements, toil in the humidity of steam laundries, scrub office buildings from dark until dawn, strain through endless and nerve-racking days in department stores and dispose of all the rest of the world's dreary drudgery. To the pitiful plea of these workers for a voice in the fixing of conditions that shall govern their industrial

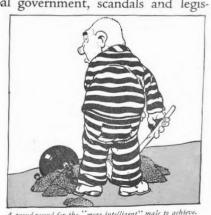
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status, we hear the asinine echo: "Woman's place is the home." The grim hypocrisy of it!

Now for the second stanza in the anti-suffrage song: "Women are constitutionally unfit for political activity." Nation-wide equality hasn't arrived yet—not yet. So, obviously, it is impossible to offer a complete refutation of this unwarranted assumption. However, if the past is any index to what the future may be, we can be charitable enough to forget this statement. For in every single state where woman has legal recognition, she has injected a better, cleaner and more independent note into politics. In every equal suffrage state woman is responsible for more humane laws and a finer justice. And in no state, even the there is in every case a male majority, does woman stand in danger of having her vote annulled. In short, the case for women has amply justified itself as far as it has gone and to deliberately overlook these facts suggests either astigmatism or malicious intent—both of which are produced by partial paralysis of the pericranium.

Now, as to woman's incapability by lack of experience, and inferentially, as to man's ability through one hundred and forty years of herculean attainments. Quite a number of these man-wrought miracles are not such a much, after all. Some of them are nothing much to swell up and get dizzy over. For example and to wit: long, weary years of corruption and stupidity in municipal government, scandals and legis-

lative incompetencies; an economic system that, in the richest country of the world, has reduced three-fourths of the male wage earners to incomes of less than \$600.00 per year; child labor a necessity among the poor; five to six million people constantly and vainly seeking employment; and a number of other unpleasant conditions that are continually becoming worse instead of better. Aproud record or the governing "thinking," "more ntelligent," males to have achieved!



more intelligent" male to achieve.

When we started out almost a century and a half since, we had fine, lofty ideas and ideals for government. All of us were to have political freedom, a fair share of the country's wealth, enough to raise families in comfort and happiness. After all these years of arrogant, vain, long-eared male rule, we have developed a society where wealth, opportunity, comfort and even the bare necessities of life are being concentrated in the few. We have developed a society that smolders with discontent—a society that flares up incessantly in strikes, bloodshed and crime. And finally, we have developed a society bitterly conscious that democracy is fast becoming a vain hope and an empty name. In short, after having a place in the sun for many years, we proud and haughty beauties find that all we have done is to cast a shadow. We have assumed with true male conceit that we could run the whole show; that contrary to the principles of freedom, we could legislate and govern without the consent of the governed; that any male—from the criminal and gutter scum up—was of infinitely greater worth than any female. These have been our sacred rules and they have failed. We have stood by these rules with a steadfastness equalled only by an overbearing stupidity and our most damning indictment is that we have failed.

Now let us pause a moment before we get all sweated up. Let us see who is doing all this braying about woman's inferiority. Who is responsible for this high-handed chivalry that would tax women but deny them any right of deciding how much or what for; that would prosecute women but not



Comrades

permit them to serve on a jury; that would allow women to bear children but give her no voice in their training—in brief, who are the gallant gents that are protecting one half of our populace from the burdens and hardships of citizenship?

First of all, passing notice may be taken of this singular little fact; the suffrage and prohibition issues are, and always have been travelling their rocky roads, hand in hand, like a pair of little orphan girls with "no mother to guide

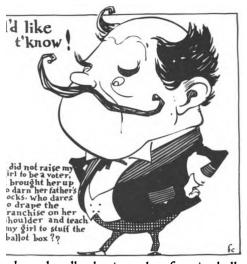
them." The relationship is one of mutual interest and helpfulness. Another small but conspicuous circumstance is that the sections of the country where the suffrage propaganda is spreading most rapidly, are identical—except in the south—with the sections where prohibition is popular. Away back in 1881, it stands in the records that the National Brewer's Congress adopted a resolution opposing woman suffrage. Now, what is the meaning of all this? Figure it out, you mathematical sharks; if Suffrage and Prohibition are such jolly little pals and certain interests are industriously aiming to slip the skids under Prohibition, who-oh who-is so busy trying to put Suffrage on the fritz? Draw your own conclusions and let us make the worst of it.

Ranged alongside of this mystery, we find our old friends, the child labor advocates, the vice promoters and the champions of militarism. To these eminent and distinguished gentlemen, the suffrage issue is no idle jest; it is a cruel and hideous reality. And when the people of this country awaken, as they surely and inevitably will awaken, there will be one sickening thud, a funeral dirge, and the exploiters of women will have passed off into the great beyond. Just now, however, a generous expenditure of ill-gotten gains is responsible for the purchase of restrictive laws, but money never has and never can buy that entirely different commodity known as justice, which is something that always comes around after endless delays in shipment, and in spite of man-made laws.



Is the Female of the species as deadly as the Male"

Now we have hurriedly pointed the finger of scorn at the moneyed interests who are so loudly shouting that woman's place is the home. But let us not lose sight of the virtuous and old fashioned "head of the house" who draws himself up proudly to his full five feet two, and asks: "What about me? If women get the vote, who's to be the boss?" Yes, there are many of this breed running around without a muzzle. There are several, to the personal knowledge of your Editor, right here in Cleveland, Sixth City, as plentifully advertised. These men all day long may be abject



vassals, they may quietly take the orders of some browbeating superior without question or quibble, they may cringe with their tails between their legs for eight or nine hours a day; in short, they may have the courage and independence of a roquefort cheese. But put one of these same truckling yokels by his own fireside and you have a domineering dromedary, who rules with an iron hand and an iron head; who lays down his little narrow heresies because tradition has invested him with a fictitious superiority that he cannot display in any other way; and who feel-

gly and endlessly sings that favorite ballad "What I done and how I done it."

Authority for its own sake, lordliness for self-gratification—these produce ompous, vain, overbearing egotists, who are obstacles in the path of

ocial development and barnacles on ne Ship of Progress. The mossacked monarch of the home has elt, with the march of civilization, nat he really wasn't made of any ifferent or better clay than his helpnate. But this is the type that clings enaciously to dead and buried errors, hat fondly cherishes the old, the ecrepit, and the obsolete and that bhors anything and everything unler the sun that is new, because it is departure from the old.

Right now in our distracted midst ve are encumbered by an alleged statesnan who has been in the public eye



for many years and by virtue of these expedients: preaching the commonplace garnished by bromides and bombast, appealing to passion and prejudice, simulating sympathy with the clamor of the unthinking-truly the Prince of Com-This bunk hero, who hasn't had a new idea or forgotten an old one in thirty years, once said before a large body of business men something to the effect that the "beliefs of my father are good enough for me." This is the philosophy that takes no heed of changing conditions, that recks not of social or political or economic advance, that was conceived in the stone age and still lives



there. And, men, this is the philosophy behind the cry that woman's place is the But all is not lost. The death rate is clearing the tracks and more and men are coming to the belief that equal suffrage is not a privilege to be granted ! sex to another, but that it is a birthright withheld by tyrannical, self-sufficier stupid autocrats. The ballot was the instrument that delivered us out of bor It was the means to freedom, responsibility and self-respect. Women constitut half of society, and without a vote, they are without freedom, without responsi without self-respect and society is divided between twentieth century and sixta century minds. Give women the same rights as man and we shall have a better ernment, cleaner and finer society and industry, and a nobler and purer democ Verily, 'tis a consummation devoutly to be wished.

REQUIEM

ALAS, Herr Bryan! a fellow of infinite vest. Gone and soon forgotten. Such is bubble of control of the struggle on anc bubble of grape juice fame. Through many a dark hour must we struggle on and bereft of the lilting carols of the Prophet of Golden Peace—aye, the Profit of Golden P. In our barrely caravan from w. In our hour of black despair he has been gathered into that innumerable caravan from w. Chautauquan bourne no traveler returns.

In this our time of sorrowing grief let it not be said that we endured our trials with fortitude than the courageous Apostle who met his troubles with such glorious resignat.

Sail on, O Secretaryship of State!



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THE CLEVELAND TWIST DRILL CO.

CLEVELAND

CHICAGO: 9 NORTH JEFFERSON ST. NEW YORK: 30 READE ST.

THERE are two kinds of discontent in this world—the discontent that works and the discontent that wrings its hands. The first gets what it wants and the second loses what it has. There's no cure for the first but success; and there's no cure at all for the second.

-George Horace Lorimer.



BE good; let who will be clever;
Do noble deeds, not dream them all day long,
And thus make life, death, and that vast forever



Andrew Eadie, Editor

OME remarks which we have heard from time to time, as well as some experiences we have had, lead us to clamp the subject of Courtesy in Business to the press and start our high-speed quill toward the true inwardness of the subject.

Of course, the present always seems unregenerate to the type of mind which looks backward to a mythical Golden Age. Often it is a case of being so close to the trees that we cannot appreciate the extent or the beauty of the forest. So, if this search for a little truth seems to develop into an argument in favor of something as opposed to the absence of that something, the writer at the same time decidedly does not wish to be classed as a pessimist who thinks the world is on the way to the demnition bow-wows.

For instance, a common scenario of 1915: Mr. Bantam, driving his Autoford on the left side of the road, dashes through a crowd of parading Suffs without sounding his Klaxon or using the brake. He stops at the point of most congested traffic and leaves the jit at the curb in front of the most impressive office building thereabouts. Tilting back his helmet, he enters a fine office, strikes a match on the beautifully polished mahogany table and after lighting his Cremo shouts at the top of his voice to the proprietor: "Hey, you, want any whatnots today?" This form of reversegeared courtesy is all too prevalent.

It is difficult to draw back the curtain which hides the rules of conduct of the first lone human being, even if we can believe that there originally was one man living alone on this earth; but it can be asserted positively and without fear of the dynamiters that whatever he did, hurt nobody's feelings except his own. Our friend Adam could do as he pleased. There was nobody around to desire him to have a heart. But his children's children's children somewhere short of the n-th power found themselves differently situated.

Even primitive and savage peoples herded together. There came a time when human beings became relatively numerous in certain sections, ideas of property sprang up, governments came into vogue to protect property, and people came gradually to realize that the man who lived among men must not conduct himself in the same unbridled way as the man who lived alone among brutes. Religion with its ceremonials, some sort of moral code, ideas of caste, and many other considerations helped to mold the rules of conduct in

COORE



each tribe or people; but every nation, every tribe, every group of human beings in ancient or modern times of which any record is preserved has had some simple or complicated

By man's manners—he must be judged code of etiquette or behavior in addition to the legal code under which it lived.

To attempt to put Courtesy down as a matter of rules would be to become so intent upon Hoyle as to forget to play bridge; Courtesy we like to define as conduct based on a recognition of the rights of others and a consideration for their feelings.

Good manners are courteous manners and it is by a man's manners that his attitude toward his fellows must be judged in the main. Foppishness is no more good manners than papier-mache stage fowl is real food. Bad manners may be the result of ignorance, but it is a question whether the average man hasn't about as much admiration for the rude chap whose actions plainly bespeak his attitude of disrespect as for the

trough-treading hog which has served many generations as a type of discourtesy. Courtesy is a lubricant of life. Its simplest effect is to make the conduct of affairs more pleasant.



Courtesy making the road easier Page Three









Simplified dining

The minor rules of good manners change from time to time. One period is marked by elaborate codes of etiquette while in another the manners of the socially trained are more simple. Fundamentally, courte-

ous manners are an expression of the idea of the inter-dependence of civilized man. The lover of simplicity may rebel against over-developed ceremony; but he must beware lest what he intends as a show of love for simple things or of independence from formal things will be construed as ignorance or deliberate selfishness.

There isn't, perhaps, any good type of the courteous quadruped, but the human biped, so we are told, has a soul and a brain developed much in excess of the brain of even the highest type of anthropoid ape. For ages he has recognized that his life in groups necessitated a different conduct from that of the brute and the principle has withstood the assaults of many a reformer.

Herbert Spencer says:

"Law and religion control behavior in its essentials; manners control it in its details. For regulating those daily actions which are too numerous and too unimportant to be officially directed there comes into play this subtler set of restraints. And when we consider what those restraints are—when we analyze the words and

phrases and movements employed we see that in origin as in effect the system is a setting up of temporary governments between all men who come in contact, for the purpose of better managing the intercourse between them."

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In that view of manners—and it is the scientific view regarding good manners as opposed to foppishness—bad manners are anarchistic. Sometimes an exhibition of bad manners may be made as a way of advertising, so to speak; the exhibitor's idea being to call attention to his own importance. But it is being very generally accepted nowadays that the ludicrous style of advertising is ineffective as a sales force. An ape may be perfectly able to stand in a pulpit, but he wouldn't make many

Every man likes to be jollied by a recognition of his importance. Spencer has pointed out that many of the surviving forms of salutation and expressions of ordinary conversation are evolutions from primitive practices which were intended to attribute regal status to the person saluted.

So, in considering Courtesy in Business, we may make the assertion that it's good business to be courteous.

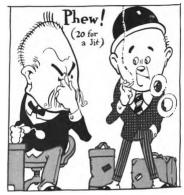
No, kind reader, we are not deceiving ourselves. There are other and better reasons why it is good to be courteous at all times, or nearly all; but it does seem that if the strictly commercial consideration is in favor of courtesy, it may help a little.

TNINT



We repeat, therefore, it is good business to be courteous; and, conversely, it is bad business to be discourteous.

On a certain day a salesman came into the office of a man whom he didn't know well. Without asking permis-



One method of selling goods

sion the salesman proceeded to smoke a cigarette. It was more than a year before that buyer would admit that salesman again.

A young man once called at an office where he was anxious to install a typewriter. The proprietor asserted that the machine he had was perfectly satisfactory. "Typewriter" said the young man, looking at the instrument, "you don't call that bunch of junk a typewriter, do you?" He went out very hurriedly and never did sell his machine there.

In each case a lack of consideration for the other man was fatal to the salesman's prospects.

It is hardly possible, however, in the limits of our space to give specific instances of discourtesy. Every reader can supply a sufficient number from his own experience or observation.

Certainly only a small range of observation is necessary for a realization of the fact that more and more attention is being paid to the training of employees in courteous ways.

If there has been any decline in the practice of good manners in business it has been due, no doubt, to the growth of organizations. In the days when the boss

personally directed the tasks of his employees and to some extent at least was associated with them in their work he could know first hand something of their manners, but with the development of enormous establishments the employer got farther and farther away from the employee. Not strange, then, that for a time the matter of the way customers were treated received little attention.

But the profit-bringing effectiveness of good manners is being more and more realized by the most progressive organizations. "The public be damned" attitude attributed to a former great railroad chief is a thing of the past and "the public be pleased" has been substituted. When a corporation which cannot be suspected of sentimentality thus plainly recognizes the virtue of courtesy in building up business, he is bold who doubts that courtesy is an equally valuable asset for the individual.

Virtue has long been said to be its own reward, which means, we take it, that a virtuous man doesn't need to be laden with medals in order to reap the benefits of virtuous conduct. So with courtesy, as with all of the finerthings of life—the man who is courteous knows that he is so and the practice of courteous manners brings

to him a reward, even though Generalissimo Carnegie may not have a pension ready for him.

The practice of courtesy indicates training. It necessitates self-control. Intuitively one respects both training and self-control. So the manners



Junk typewriters and junk salesmen

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No.



H. S. Straigh Shank

PERFECT DOUBL



Any taper shank tool with a broken reclaimed thru the use of a tang — 25% to 60% stronger than shank in two or three minutes and

the tool a new lease on life.

"Perfect Double-Tang" Soci

- (1) Have two driving slots
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Once tried you will find "Perfect Double-Tang" Sock

THE CLEVELAND

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E-TANG SOCKETS



Perfect Double-Tang" Socket. A new the old one — can be ground on the this tang with our patented socket gives



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instead of the usual one.

so that the tang cannot twist off.

ols but they enable the new tool to

use the tang cannot twist off.

No loose or adjustable parts.

gular taper hole.

ts indispensable to efficient and economical shop operation

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ELAND

NEW YORK: 30 READE STREET

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of courtesy give an advantage which is not to be lightly considered.

Courtesy seems, indeed, to be akin to courage. The Japanese developed centuries ago a system similar in many respects to the chivalry which was practiced in Europe and one of the tenets of faith of the Japanese knight was: "This is the aim of all etiquette: you must learn to demean yourself in such a way that the roughest rascal would not dare to attack your person even if you sit still."

Not a bad view that of the advantage of self-control.

Brain power is a great power, of course, and merely good manners or even true courtesy will not make amends for a "nobody-home" condition of the cranium; but speaking by and large, the individual or the organization which fails to recognize the effectiveness of Courtesy is running with sand in the bearings.

Now as previously stated we are not pessimistic. It may be that conditions of life in this country have driven us away from elaborate ceremony and few, certainly not we, should feel badly about that. But it isn't the one cylinder chug-chug that makes the most noise which moves fastest. It is possible to do things rapidly by deftness and at the same time do them smoothly. The six-cylinder



"would not dare attack your person"

is smoother running than the one lunger and more efficient. So a savoir-faire that enables one to glide smoothly and quietly over the rough places of life is a rightly to be prized acquisition.

With some hesitation we make our next observation, namely, that it is largely the task of women to set the standard of courtesy. It may not always be so, but at the present

time for weal or woe the home life of the average man in business is very much restricted. If he sees his children for brief periods in the morning and evening he is lucky. Seldom is he their companion at times when they are engaged in play and other active pursuits. Then, too, in public schools the big majority of teachers are women. So the mothers and the school teachers have most to do with the social training of boys as well as girls.

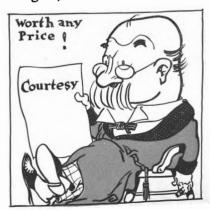
The point may be a bit off the main track but there won't be any courtesy in business unless there is courtesy elsewhere. It is conceivable that the young business man who performs a courteous action on his way to work in the morning, such as giving up his seat to a woman in the street car, will be the more likely to hold a courteous attitude throughout the day. True courtesy is not a mere office coat with specially large pockets for the reception of dollars.

Men have become famous because of courteous manners; some have become infamous because of boorishness. Dr. Johnson for instance is admired for his learning, but despised and ridiculed for his bad manners.

A spasm of interest in efficiency has perhaps recently retarded somewhat the growth of manners in business. Every so often some statistician, who has so developed his own efficiency that he has time to waste, figures out how many years of time are lost every day by telephone girls in saying "Number, please" instead of merely "Number." It always seems ungracious at the best to spend time making any such calculations. The

telephone people themselves know how long the public squirmed under treatment that amounted to discourtesyand now that they have seen the light—or heard the bell—why cavil at their efforts to put a smile onto the wire. It was with joy, therefore, that we read recently in a business paper that no matter how much time it took to say "please," it was worth while.

Efficiency brought us the rubber stamp signature on letters—not on duplicated letters but on personal busi-



Page Eleven



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No 436

436

H. S. Blackmiths' ness letters—and we are inclined to blame the same spasm for that stamped outrage on decency: "Dictated but not read." Why anyone should read a letter that the writer wouldn't read before sending is hard to understand. Once or twice we've been tempted to send some of those letters back with the notation: "Received but not read."

As a matter of fact, the middle name of the commercialized efficiency paroxysm which leads to a disregard for the amenities of life is Bunk. Man has been some thousands of years on the upward trend and he isn't going to stand in this age for a lessening of the respect which his fellows pay him.

Courtesy in a business house creates a distinctly good impression because it indicates that someone in authority is particular regarding all details of the conduct of the business. Courtesy alone would not maintain the house as a going concern; but it will help a going concern to go better. The big men of the world, generally speaking, have been courteous men and yet some of the big men at the heads of big business have not appreciated the fact that as a chain is no stronger than its weakest link, so the reputation of a house for courtesy may be no higher than the standard set by the least courteous person in the organization.

How high an opinion one gets of a business house from really courteous treatment at the hands of the minor employees with whom one generally comes in contact first! Great is the influence of our Lady of the Switchboard in giving out impressions and equal unto her is her sister, Miss Information.

Let philosophers debate the point as to whether man's greatest object is to work or to obtain some higher good through work. In either case, who would deny to man at work the enjoyment derived from treatment which seems to take account both of his rights and his feelings? Certainly the great teachers of the world have not taught discourtesy; surely the leaders of the business world do not advocate it.

Bluntly, lack of courtesy is a flaw which casts suspicion on the fineness of the gem. Discourtesy to one who is not in a position to openly resent it is a low form of cowardice. Politeness to a superior may be only servility. True courtesy in Business as elsewhere is not servility or weakness or foppishness, but is a sign of thoughtfulness and self-control, training and consideration, and may well indicate true performance in more vital matters.

Thus Endeth this Courtesy chat.

Purely Persona

OT far from here there is a man who at one time when interests in our product, wrote for our catalog. We sent it on posthast secretly hoping that in the fullness of time he would come to kno us better—even try our tools, perhaps.

So that he wouldn't forget us entirely, we added his name to our Mailin List and sent him a copy of Drill Chips every month.

It wasn't long after that when our friend changed his position, or had nice red salmon can tied to his promising career, although we have no heard that his decline and fall had anything to do with his failure to buy "Cleveland" tools. At any rate, he took up some quiet and restful vocatior in which twist drills, naturally, played no part.

Unfortunately, this transpired in the temporary absence of our Mindreading Expert who is becoming quite unreliable of late. Ordinarily, when he is on the job and his gears are properly meshing, he can keep track easily of



Editors who would rather do this than work

our thirty thousand readers and report promptly all changes in address, additions, discontinuances, etc. This is a simple thing, but as every Mindreading Expert knows, it can not be done without a card showing the holder to be in good standing with dues paid up or without the daily three fingers of that famous minds eye-opener, Old Siwash. As we have all learned, the supply of O. S. is cut off on account of the war; and verily, therefore, we add our own little echo; war is hell.

Page Thirteen

Well anyhow, this chap we were talking about, before we started chinning out our private affairs—he didn't tell us where he was going when he camped and therefore Drill Chips ceased calling. He thought we had cut n cold in his hour of distress and so he resolved to go after us with a padded mmer. So he penned off a gritty little ultimatum stating in snappy rhythm; opinion that Drill Chips was foolish and futile; that the editor was mired to the hubs in the vats of Cosmic Funk and that American manufacturers ruld do well to abandon their debilitated attempts at commercial literature and ablish a home for Infirm Editorial Proselytes who would rather do that an work.

There was a page or so of this good stuff together with some other stinging mment on various articles recently published. Proving that Friend Correspondent had carefully read our magazine, and was open to the burdens of a blonged controversy.

An inconspicuous postscript gave the new address and requested that back mbers and succeeding issues be sent there. Thus we see that all is not lost d that "inconsistency, thy name is not always woman."

*** * ***

There are people receiving Drill Chips regularly who are not now and never ll be interested in our story. These names represent waste—a mutual wasteney are on every Mailing List and always will be, and the best anyone can do to struggle toward the minimum percentage of lost effort and energy.

We want you to get Drill Chips if you'll read it or hand it over to some one 10 will. The fact that you are not buying or using our product today or morrow doesn't make any difference to us. If you want Drill Chips and will id it, we'll take the risk of securing your good will and eventually some part your patronage.

But—if Drill Chips roils the equilibrium of your soul, pass the word to us a post card and we'll do our part to preserve the psychic serenity.



C. T. D. IMMORTALS

RILL CHIPS has many departm Sometimes they conspire to confus Editor. That, however, is no reflect on old boy Ed. The multiplexities of life induce cerebral skidding in wholly normal rational beings. Be it known, then, that the hold of indifference is to add another department, to wit and viz.: The Fine Arts Ga To make an auspicious start, we will first to our salesmen to the public gaze.

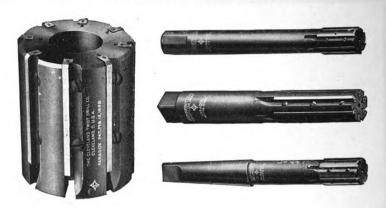
Here we present the lissome and willowy f of John G. Ladrick, dean of our sales force, w habitat is North America, and who at one or other has extolled the merits of "Clevela tools in most every corner of this alert and p ising globe. Hon. John has that adroit facul making friends for himself and his company in the western states where he has idled away recent years, he knows his trade by their ma name, whether or not they take their linourishment straight and other items impor in the gentle art of selling.

Our lady readers will be interested to know Mr. Ladrick, although highly eligible, is as unattached. All personal letters and private pards on this subject should be addressed in a of the editor who will read them with great cathus keeping in touch with market conditions.

Esquire Ladrick was born—yes, indeed, and a very early date in his career—in the neight hood of Interlaken, Switzerland, and unlike m neutrals whose letters of denunciation appear the daily prints, he is neutral.

PARADOX REAMERS

.



"PARADOX" Reamers are adjustable, yet solid—hence the name. Most reamers are either adjustable or solid and thus limited to the particular merits of their type. But the "Paradox" combines the advantages of both styles and thereby effects a large saving in tool expense. The "Paradox" Adjustable Reamer is entirely different from other adjustable tools. It cannot be put out of adjustment by simply turning an adjusting nut. The "Paradox" is so constructed that it is necessary to remove the blades from their grooves in order either to increase or decrease the size of the reamer. Tinfoil packing is used in the grooves and adjustments can be made ranging from .0005 to $\frac{3}{32}$ of an inch—on large sizes even more. The blades are screwed firmly to their seats, held down and in against the back and bottom of the grooves so as to have the greatest rigidity. Taper-headed screws are used, one of them placed as near the cutting end as possible where firm support is most needed. The blades are unevenly spaced to prevent chattering; they cannot spring as they are practically solid with the body and they will ream a clean and absolutely accurate hole.



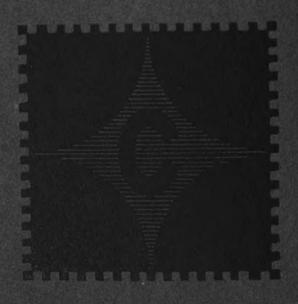
THE CLEVELAND TWIST DRILL CO.

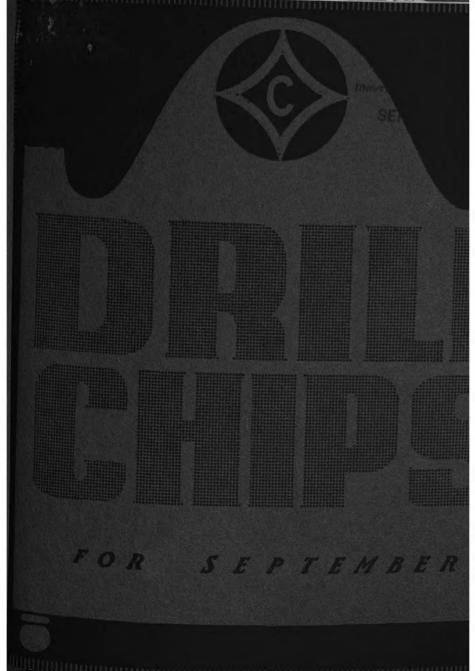


CHICAGO: 9 NORTH JEFFERSON ST.

NEW YORK: 30 READE ST.

DO what thy manhood bids thee do;
From none but self expect applause:
He noblest lives and noblest dies
Who makes and keeps his self made laws.





Self-made pedestals are far more numerous than self-made men.



Andrew Eadie, Editor

done in a hurry. No enduring achievement has ever been wrought over night. Always we are burdened and retarded by mad haste, yet the most precious things for which our quickly earned money is so lavishly spent, are those which time and infinite care produce.

Michael Angelo chiseled for twenty days on the ear lobe of a statue; a Persian spends a life-time in the weaving of a single Schne rug; the Cathedral of Rheims was two hundred and fifty years a-building; a Steinway piano is three years in the making and wines of old vintages bring fabulous prices. On every side we see evidence that time is absolutely necessary to the evolution of any permanent and abiding attainment.

Creation is born of contemplation; and when the final picture of the Spirit of Accomplishment is painted it will show a great man lost in meditation.

Copyright, 1915, by The Cleveland Twist Drill Co.

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Down on the great Wooden Way there is a man who paints and carves. He is slovenly, unkempt and unwashed; he turns out a "work of art" every twenty minutes, finding too, I ween, a ready market for his wares. Thus we see how easily activity may be mistaken for art.

What is art? Is it a matter of long hair, flowing scarfs, obstinacy or unlaundered linen? Is it a thing of perversity or lax morals? Or a well-turned ankle on a windy day? On your life it is not.

Art is simply the systematic application of thought, knowledge, and skill in effecting a surpassing end, and that end may be a picture, a poem, a furrowed field or a machine tool.

For example, a drill or a reamer—a "Cleveland" drill or reamer, if you please—did you ever stop to think that this tool has been forty-one years in the making? Did you ever consider that this simple thing has evolved from a melting pot of thought, research, experience and skill, covering more than two-score years? And finally that it really embodies a high degree of art in that it achieves surpassing results?

In the endless cycle of eternity, life comes and departs in a twinkling. Only art in its various forms, endures—goes on forever.



ARDLY a day passes that we do not read of industrial warfare with its strikes, boycotts, perverted law, killings and all the other offenses and outrages in the crimson circuit of crime. Professional agitators, posing as the righteous "defenders of labor," have taken recourse to all forms of lawlessness. When insolence, threats and bullying were ineffective, these labor-leading Lilliputians in their frenzied lust for personal profit have invoked without conscience or scruple any and every criminal means to attain their end. On the other hand, employers of labor have manufactured their own brands of justice and have doled it out generously with the aid of bribery, strong arm squads and the genial gunmen. Thus, from the upheaval of these two mighty forces, we come to have a social and industrial unrest—an unrest that even now rocks

whole communities in its grasp, that produces panic, poverty and pauperism and that imperils the very foundations of democracy.

Let us see how all this came about.



Strong arm squad and genial Page Three



Shank



Neighborly love

In the first place, before there was any such disturbing influence as money, the individual plodded along in his own private groove, making his own Palm Beach suits, shooting or trapping his own

corned beef and cabbage, living in his stuccoed, made-to-measure bungalow and loving his neighbor as himself, taking care, of course, that his neighbor's husband didn't find out about it. But this scheme was like all other things that are good; it died young. The change was due to the fact that certain individuals produced more than others. Some showed greater aptitude for special lines, and as a natural result, different work came to be apportioned to different individuals. In these special lines some possessed greater efficiency than others and in time they created a surplus of certain commodities. With this surplus idly lying around, what more natural than that trade or barter should come into being. For if one citizen had a couple of excess wives and really needed a half dozen durable fig leaves, why shouldn't he make a trade? Why, indeed? But the difficulty arose when the trader had only one or two leaves to exchange, for which he could get only one-half or one-third of a wife. This was an obstacle in the path of progress, so a medium of exchange became essential to the adjustment of values. This medium was money.

At this point we begin to get a little light on that merry myth about all men being free and equal. For, while some possessed or cultivated skill, industry and thrift, others just driveled along like a dodo



without any more push or purpose than a pail of petrified putty. Some developed a vision relating to future values; some were shrewd, cunning, selfish or crooked, and others didn't have the foresight of a bismarck herring. All these attributes made for the attachment or detachment of money and thus there sprang into existence the employer and the employed, the capitalist and the laborer. Since the very birth of trade, of money or any other medium of exchange there has always been this distinction and so long as men are human, and therefore essentially dissimilar, there always will be — razor hacked account of the state of the s backed reformers and anarchistic clap-trap notwithstanding.

and and the second s

The accumulation of capital entailed certain inevitable results. It gave increased power to the individual and this too often led to oppression and disharm and the control of the control dishonest treatment of labor. Another result of the concentration of money was that it aroused jealousy and unnatural antagonism in the laborer. But let us here record an important fact. Fundamentally, labor and capital are allies, not enemies. They are conjointly inter-dependent. Their interests when rightly conceived are almost identical,





and in spite of much soap-box sophistry to the contrary, their mutual object is to support life, improve living conditions, eliminate waste, and bring about greater prosperity and happiness. Moreover, they are of value to themselves and to



the world only in proportion to the perfection of

their correlated achievement.

As allies, capital and labor have mutual rights. They have the right of a square deal, the right of mutual friendship and the right of co-operative interest and support in their common efforts of ac-

complishment.

As allies they also have individual rights. The laborer has the privilege to control to a large extent his labor and the capitalist has the just prerogative to control largely his honestly gained capital. With these functions faithfully regulated, there ought to exist a placid summer's evening calm, and that such a relation endures in only a few isolated instances is proof that there is something rotten in the state of Denmark and other places to the west.

The growth of the unnatural enmity now subsisting has been brought about by several causes. First by capital taking advantage of the power of money by which the means of labor is provided. Second: by labor obstructing the use and expansion of capital, and third, by its selfish and unreasonable demands. In consequence we have oppression and injustice on

the one hand, and crimes against property and life on the other. The general effect, moreover, is a disruption and confusion in social relations, and a natural, harmonious alliance changed to warfare.

Organization of both sides has been a result of conditions. As far as capital is concerned, collaboration and co-ordination is a necessity of progress. No single individual could finance, organize and conduct the destiny of great enterprises, hence the combination of capitalists to carry on the world's commerce. Organization of labor is no less necessary, for therein lies the protection of the worker with the power to secure justice, to prevent enslavement and to maintain self-respect. Weighed in the balance, the cause of labor is of the greatest importance, and for any gilded gent to deny this betokens either blindness or prejudice, both of which are incited by carbuncles on the intellect.

Labor is the basis of life and the salvation of civilization and let no one doubt, amid the hue and cry of vested interests, of subsidized newspapers and of hypocritical hirelings that the wrongs against labor are far greater and more grievous than the wrongs against capital. The rights of labor are in a broad sense the rights

of mankind, and if that doesn't cover the matter, let us add that labor has the right to life at a living wage, and it has the right to freedom and self-respect. In short, whether you look at this question fore, aft, over the transom, or thru your periscope, you wind up at



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H. S. Straigh Shank Drill







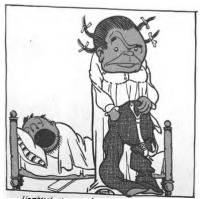
H. S. Oil Tube Drill ас об на таки бай, поинновий и периобавления

the same point, and that is that the interests of a community, a state, or a nation are securely and inseparably bound up in the

right of labor.

Now then, if Labor and Organization are such chaste and cheerful cherubs as we have insinuated up-page, why is it that only one-tenth of the working men and women of this country are organized? Why is it that, contrary to the principles of our government, the one-tenth should attempt to rule the nine-tenths—should tell them where they may work, for whom, and at what price—should regulate their hours of work and their output? Why is it that when nine-tenths protest they are vilely abused, their businesses are broken up, they are starved, assaulted and killed?

There are two reasons why. The first is that most labor unions are wrong in principle, and with a faulty foundation no superstructure can expect to endure. Every man has a constitutional right to work wherever and for whomsoever he pleases, and the right to refuse to work where it does not suit him to work. There are some things more important than fair wages or an eight-hour day and those are the privileges of working for any wages the worker will accept and of working six hours, twelve hours, or any other number of hours that make up the free day of individual liberty. Furthermore, any agreements binding employers to hire only union



Unethical, no matter how you look at the question

men are immoral and illegal abridgments of liberty, and a discrimination in favor of one class of workers to the exclusion of all others.

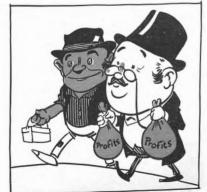
Labor unionism has other unsound principles. It demands a monopoly of all profitable em-ployment, depriving the com-petent non-union man of his rightful chance. It maintains that it has a right to obstruct or destroy the business or property of any employer who engages non-union men. It claims the right of coercion, intimidation and violence in order to force the non-union man to forego his birth-right. It does other unorthodox things such as limiting a workman's output, thus destroying initiative, raising mediocrity to the level of competence and starting an endless chain of higher cost, higher rent, higher prices, higher living. The closed or unionized shop is a symbol for sloth and inefficiency and it is inconsistent with our system of government or with the principles of humanity.

There is a second reason for the disturbances in the industrial world.

There is a second reason for the disturbances in the industrial world. It is simply this: labor unionism has been guided by unbrotherly, unjust, unfair, unrighteous and dominating leaders who are making slaves and unwilling tools of one-tenth the laboring class for the purpose of their own personal gain. And labor organizations will never be cleansed of the stigma that attaches to them until they select leaders who can lead, who can think big and act big in the face of great crises, and who have tisen to a point of comprehension where they can see that the future of themselves, the working class and all mankind depends upon co-operative endeavor and attainment.

As there does exist a labor problem so is there in the same measure a capital problem, for, as broadly hinted backaways, these two forces are mutually dependent and if their interests under a wage scale are not identical, they are easily reconcilable. The tangled and chaotic relations now obtaining can only be transformed to an orderly and beneficial harmonical transformed to an orderly and beneficial harmonical transformed.

relations now obtaining can only be transformed to an orderly and beneficial harmony by a mutual recognition of rights, by a thorough understanding of the desirability and necessity of co-operation. In the broad application thereof, profit-sharing may and probably will take an important place. Labor organizations will come into more general favor; they will be truly representative bodies in which the workers will conduct their own business and do their own



Profit sharing as a popular pastime Page Eleven

Coogle

thinking to the exclusion of professional leaders; improved working conditions and vocational training will prevail to a greater degree and all differences of opinion will be adjusted by State and National Boards of Arbitration and Conciliation.

Right at this point we may make a further reference to profit-sharing. If this plan cuts off some fond capitalistic hopes and anticipations, like all inevitable conclusions. it has its reliefs and compensations. For



Working conditions should be improved

there should be no general and permanent system of profit-sharing for the benefit of the workman that does not superimpose a consequent plan of loss-sharing. If in the hey-day of his career, a manufacturer divides his profits with his workmen and thereby makes them his partners, it is certainly reasonable to expect the partner-workmen to be ready and willing to tide the institution over periods of stress. Co-operation implies mutual sacrifices as well as benefits and when we are ready for universal profit-sharing, our workmen will have attained the wisdom that demands a conservation of their earnings so that losses may be as cheerfully discharged as profits are welcomed charged as profits are welcomed.

Must compromise their differences Page Twelve

Big changes are wrought slowly, and a return to ideal relations can not be effected over night. One hopeful sign, however, is the new element of honest newspaper investigation and publicity. Syndicalism, with its barbaric doctrines and theories, is the natural and inevitable climax of the present enmity. And to avoid it and keep in line with the true spirit of the twentiety century, capital and labor must be willing to compromise their differences, do away with them and to become in the highest and noblest sense allies, not enemies.



a further reflection



→HAT courtesy chat last month went over so strong that we are inspired to record some subsequent meditations. Dean Swift has said of good manners that they were: "The art of making those easy with whom we converse." That is, perhaps, not a complete definition yet it is excellent as far as it goes and surely if our letters to prospects make them uneasy it may be said justly that our manners are bad and as truly that our sales are bad

Before submerging for thirty days so we would aim one shot, small, maybe, yet well aimed, we hope, at the move in favor of omitting the salutation and the complimentary closing from letters addressed to people who are just as busy and just as efficient as we are.

In conversation one doesn't jump directly into the heart of his subject, not even in Yankee-land. "Good-morning, men" has ever brought its hearty "Good-morning, King" from freemen, while gentlemen since the world began have indulged in minor civilities which may take a few moments but which may also help to smooth the way. A warm, hearty and personal tone is an important asset in getting a letter across, but why begrudge the "Dear Sir" or 'Dear

Madam" or "Gentlemen" with which letters have been started? Frankly, we are free to confess a human weakness that reacts unfavorably against the coldly formal, the abrupt,

snappy or unfriendly letters.

Warmth we advocate, but in reasonable moderation. For instance if we were penning off an iridescent peroration to a certain manuacturer of motor cars, we would not begin 'Dear Henry" or "Dear Old Hank." Such in attempt at the warm and personal tone is lightly overdone and the letter would get



The warm greeting should not be over-heated Page Thirteen

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s much attention as the Resolutions of a Peace Conference. One must occasionlly use a little tact in writing letters no matter how much it hurts.

Some American firms, when they are well acquainted, hand it back and forth hru the mails in pretty raw shape. We have seen letters written in terms of the ogging camp, apparently without causing a ripple on the great silent sea of American Courtesy. And this may be a safe enough and diverting pastime when here is an Ex-Stevedore at both ends of the line; but moderation is the divine order especially when your letters may be received by some cultivated and fastidious nerchant, who doesn't understand the jargon of the freight yards, and moreover loesn't want to take any complimentary lessons in it.

Men are not mechanisms. Emotions have more to do with acts than has ogic or pure reasoning. Two and two make four always but two and a well-bred mile will pass for four in a great many cases.

*** * ***

Begin the morning by saying to thyself, I shall meet this day with the busybody, the ungrateful, arrogant, deceitful, envious, unsocial. All these things happen
to them by reason of their ignorance of what is good and evil. But I who have
seen the nature of the good, that it is beautiful, and of the bad, that it is ugly,
can neither be injured by any of them—for no one can fix on me what is ugly
—nor can I be angry with my neighbor, nor hate him. We are made for copperation. To act against one another, then, is contrary to nature; and it is
acting against one another to be vexed and turn away.—Marcus Aurelius.

*** * ***

So just remember this: Give out courtesy, kindness, patience and good will and you'll get them back with interest. People who belong up in Class A do not reek, rage or rave about the petty misfits of life. To take what comes and forget the rest is one form of wisdom.

Let George go to the mat with the janitor and the Hall Room Boys have it out with the ash-box inspector—you can't afford to roil your soul with back-yard tragedies. Fight the big fight or not at all. The ruffnex who have trouble with the ushers are looking for trouble—and find it, too. Smile, dammit, smile!

Page Fourteen



C. T. D. IMMORTAL!

H, see the man! See the mer-ry f in his lamps. Why does he lo hap-py? Be-cause he has a nice Pan-a-ma hel-met im-port-ed from far off I lyn. Why does he wear his hat in the pic Is he so proud of it? No child-ren, he it for a pur-pose. You see, he is more sev-en and his plum-age is thin-ning out sid-er-ab-ly. He has tried to de-ceive us. we see that a man may smile and smile still be a vil-lain.

Careful examination of this otherwise

tenance of one Edmund H. Jung, the second immortal to penetrate the sign cloisters of this Gallery. Early historians disagree on the origin of this Immore saying it was Bergenfield, others blaming Spitzbergen. Legend has that Herr Jung—the J is silent, as in fish—when first detected, was laboring u political aspirations and had risen to the envied eminence of assistant Mayor of some place or other. The hearty henchmen had him in mind for the vice-idency of this Grandoldlandhooray, and he such a nice man, too. Just image So he simply had to be snatched back from the jaws of oblivion and put to stegular work, where he could labor, receive periodical recompense, catch hell and then and be more or less happy and content. You know.

Sir Edmund is a farmer now. Yes, a real scientific farmer. Always arising 5 o'clock in the morning, some mornings, while the wild and profligate huckerry is hucking mournfully for its dissolute mate, he attunes himself to the matut symphony and eclatly computes his yearly profits. We repeat: computes his profits we said nothing about a state of the said nothing a state of the said nothing about a state of the said nothing as a state of the said nothing a state of the said nothing as a state of the We said nothing about earning or declaring profits.

Oh, yes. Almost we had forgotten. Sir Ed's recreation is to manage our la and busy New York branch, now and then, mayhap, to sell a few drills to the suspecting. And he's been doing this for 15 years, but his victims seem to dea love him, anyhow.

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A CONCEPTION H OF DUTY



The first principle of our duty to buyers of "Cleveland" tools is to create a product that will give the greatest service at the least expense; in other words, a drill or a reamer that will produce or finish the greatest number of holes between grindings and during the entire life of the tool. This policy, rigidly maintained for forty-one years, means that we must construct tools up to the "Cleveland" standard rather than down to a standard that would make a cheap price possible. Value is determined by service, toward which knowledge, experience and inbuilt honor are important contributing factors.

THE CLEVELAND TWIST DRILL CO.

CLEVELAND

CHICAGO 9 NORTH JEFFERSON ST

NEW YORK. 30 READE ST

Do not worry; eat three square meals a day; say your prayers; be courteous; exercise; keep your digestion good; go slow and go easy. Maybe there are other things that your special case requires to make you happy, but, my friend, these, I reckon, will give you a good lift."

-A. Lincoln





Now is the time: Ah, friend, no longer wait
To scatter loving smiles and words of cheer
To those around, whose lives are now so dear;
They may not meet you in the coming year—
Now is the time.



Andrew E. Coburn, Editor

EDITORIAL CONFIDENCES

FAMOUS man has said that "compared to a great poet, any other great man is a toad." So be it. The editor of this immortal work must confess a growing conviction that some glad dawn will see these pages done in rime. It becomes imperative as a fitting reply to the challenge. Often in idle moments we have perpetrated little jingles after the fashion of Waltmason's

Little drops of water, poured into the milk, Give the milkman's daughter lovely gowns of silk. Little rocks and boulders, little hunks of slate, Make the coal man's fortune something fierce and great; etc.

Poetry such as this is pleasing enough, but long, careful thought will show it is not really great because it does not contain the Great Thought. The Divine Passion is absent, probably being away on a vacation or something. But we commit to paper below a stanza that shows vast promise. The nebulous and exotic sentiment, coupled up by means of our patented automatic coupler (all infringements will be prosecuted) with a majestic and lilting rhythm, marks this as a work of budding genius. We are going to practice some more on our nice new slate and some day when our stuff gets into the Sing-Sing Gazette, our readers will know we

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have arrived. This is the pome we were talking about:

Let me stand on the curb of the main thoroughfare Where the trim little flappers flap by—
In diaphanous gowns, through the bright sun's rays;
For all of them do I sigh.
Why should I crawl to a back-row seat?
E'en though I'm a much married man
Let me stand on the curb of the main thoroughfare
And see of each jane all I can.

Of course this has the rhyme and measured tread of legitimate and orthodox poetry. Free verse or vers libre, presents greater opportunities. To show you doubting ones that we are pleasingly versatile we will come across again, combining, you will note, a stirring economic theme with the torrential outpouring of a symphonious soul.

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Maids of Athens, and other industrial centers
Born to the purple
Would fain forget that in this vale of tears
Prosperity doth bewitch us, as seas do laugh when
rocks are near.

Frugality, economy; virtues divine,
Open vistas of infinity. The reverberations of
eternity

Stoutly condemn the care-free habit of tossing a lighted

Cigarette butt into a waste basket or hiding it in A plate of soup.

All waste is little short of tragic. Dear thoughtless girlhood,

Yon heavens protest. For do you not know that either end

Of a Fatima may be put to serviceable use?
Better than moth-balls for the boudoir
And now that the upper crust is so friendly to
Milady Nicotine—they are comme il faut, to say
the least.

Despise not the misunderstood cigarette butt; Humble though it may be, it has its part to play In the Great Cosmic Scheme.

Not bad, that, for a minor or apprentice pote. But we shall not rest content with the laurels already won. Ever we shall strive upward and onward and if we are saved from the assassin's hand, who knows; ah, me! whose nose—we may even get 18 miles to the gallon.

Page Two

N THE terrible cataclysm that has engulfed most of the civilized world, there appears a solemn lesson inscribed in characters of blood. Are we to read it aright and preserve our honor, our liberty, our very lives; or are we to blunder along complacently, with eyes that see not, and suffer the inevitable price—the penalties of humiliation, degradation, even of national effacement?

In the existing state of civilization, war is one of the certainties. Wars of retaliation for real or fancied wrongs, wars of aggression, wars for one cause or another will continue to mark our advancement until that millennial dawn when spiritual considerations dominate the material ones, when men have taken on the unsullied robes of supermen or in short, when the discursive T. R. subsides. As yet there is little to indicate the immediate approach of that glad day.

Meanwhile we have much to do. Citizenship, whether by birth or adoption, imposes certain obligations that are imperative to national preservation. The first of these is loyalty to one's country. Loyalty demands that the interests of the nation be jealously guarded and that its honor be upheld—even to the death. And to insure the in-



No.

H. S. Faper Shank

tegrity and security of these United States of America it is absolutely and immediately necessary to provide adequate measures for the national defense.

Certain well advertised events have shown that peace treaties, arbitration treaties, neutrality treaties and such like pleasantries are highly ornamental for the family album or even useful when relining the pantry shelves. are not widely celebrated as a deterrent when Moloch girds up his loins and fares forth on venture bent. Consider the case of Belgium and Luxembourg and Korea. They experimented with treaties and found them about as valuable as a last year's almanac. China, a peaceful and dozing country with no army or navy to speak of, sought to prolong its national siesta by means of treaties with pugnacious and hungry countries, but the verdict was delivered by the pugnacious and hungry countries in advance of the evidence—which wouldn't have mattered anyhow. Plainly, the moral is that the more battleships that are dusted off and ready for business, the more clearly the principal parts of a treaty will be recollected.

The primary duty of America is to prepare to protect her interests and defend her rights. Since this can not be accomplished by written agreements of the most sacred character, other and more effective means must be employed. Those means consist of an adequate and well trained land force, a sufficiently large and well-equipped 1916 model navy, together with such coast and harbor fortifications as may be con-

Page Four

sidered handy in the case of visiting navies that arrive unexpectedly and unannounced. Add to this tidy trinity an alert and united spirit of patriotism and you have a nation that can sit tight and bid the enemy begone while the going is yet good.

Switzerland and Belgium offer instructive commentaries on the value of preparedness. The former is completely surrounded by embattled nations, who without a second thought would scorn their treaties of neutrality, were it not for the fact that Switzerland has perfected boundary defenses and a military system that evokes the respect of all belligerents. Without the industrial and financial burden of a military class or a standing army, this little nation can call to arms every male from twenty to forty-eight years of agecitizens who have been trained for short periods of every year to the use of arms and who have the knowledge and experience necessary to present a formidable defense. This citizen army to which every man belongs discourages war by reason of its preparedness, and the value of the treaties of neutrality does not in any measure depend on the good will of neighboring governments.

As a contrast to the security of Switzerland there is no better illustration than Belgium, a neutral nation that was not prepared to maintain by force, its neutrality. The consequence was that a brave and patriotic people became pitiable victims to the ruthlessness of war. Inadequate preparation not only invites aggression on the part of better prepared nations, but it results in the prolongation of war once commenced. Consider England. She was unprepared for the present struggle and according to reports, is still unprepared. And if she







doesn't soon prepare, she is likely to secure peace only at the price of ignoble submission and the loss of national honor.

The pernicious activity of the ultrapacifists is a menace to this land. We



Peace at any price

want peace, to be sure, but to place peace above righteousness is not only a mistake; it is a monstrous iniquity. The white-livered recreants who prattle the peace-at-any-price sophistry are actuated by fear, material interests or hypocritical milk-and-water virtue. They echo the unhallowed effluvium of the Great Commonplacer, who contends that "Americans who go abroad either for pleasure or business need not look to the government of the United States for protection for themselves or their property." In the ripeness of his wisdom, Robert Ingersoll twenty years ago paid his respects to the Peace Prattler as "a man without reason, logic, imagination or pity," and in concluding his famous speech, set down these death-less words: "A government that cannot protect its citizens at home or abroad ought to be swept from the face of the earth. The flag that does not protect its protectors is a vile rag that contaminates the air in which it waves. The government that does not defend its defenders is a disgrace to the nations of the world." There is little that can be uttered in behalf of the peace-at-any-price sirens. As the immortal Shakespeare hath said, their brains are in



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"The Peace Prattler"

their bellies and therefore they do not comprehend that peace without righteousness is moral deterioration and national death.

Although the United States is ostensibly a neutral nation, the neutrality doesn't go much further than theory. For its people

are divided in their opinions and "wear their hair parted everywhere except in the middle." The rights of this nation as a neutral have been disregarded by both Germany and England and as international law or international custom seems to avail us nothing, there should be a united effort by pros and antis to see that protection is secured against any and all foreign countries. Proper defensive measures will preserve our standing as a nation, will prevent infringement of our rights and arouse a respect in other nations that will make them hesitate about planning aggressive movements.

Leading authorities are agreed that this country is wholly unprepared to resist invasion. Our land forces are insignificant; the militia—our only trained reserves—pitifully small, and the navy which is our principal means of defense, is antiquated and altogether incompetent to fulfill its legitimate function. Mr. Bryan (may his tribe decrease) has spoken emotionally of the million volunteers, brave and true, that would arise between dawn and sunset—only he didn't add that they would be shot down or captured by the following sunrise. Verily upon some day it shall come to pass that free



No 417



H. S. Straight Shank

THIS "PARAL



THE CLEVELAND TW

CHICAGO: 9 NORTH JEFFERSON STREET

OX" REAMER

To the second

Designed for one of our customers, illustrates the possibilities of "Paradox" construction. This tool reams a hole having twelve different diameters. Once the adjustable blades are fixed in their proper place, twelve separate reaming operations are condensed into one, with great consequent economy. "Paradox" Adjustable Reamers, patented and controlled by this company, are made in all types and sizes. Due to the construction the blades, though adjustable, are practically solid with the body when fitted and locked into their place. ¶ For every single or compound reaming job there is a "Paradox" that can save you much time and expense.

ST DRILL CO., Cleveland

NEW YORK: 30 READE STREET



No. 426

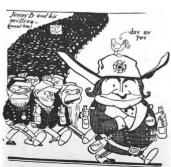






speech will not be so free and public men out of a job will be compelled to think twice before they speak once, and then speak it softly. But upon that day the heavens shall fall and the earth shall split apart and Grape-Juice Bill shall seek the solitude of a philosophy that knows no speech.

The change in military tactics has made volunteers well nigh useless. The complexity of modern warfare demands men of certain scientific training and knowledge. The old arguments of isolation and natural geographical advantages, clung to so tenaciously by pacifists, are no longer valid, because in the first place, present methods of warfare bridge distances and in the second place, the United States is a world power with world-wide interests and possessions that lie beyond its boundaries. Two facts stand out clearly. The first is that we are not prepared to defend ourselves and the second is that we should be, if there is any desire to insure our future existence. What can be done about correcting this dangerous condition? The most important thing is to go out and get a regular navy; a greater number of ships, faster ships, up-to-date ships that carry modern equipment and when we get them put them in charge of officers and men who are efficient in naval matters. With our 30,000 miles of continental coast-line and other possessions to protect, we ought to have a navy up in the first rank, instead of a poor make-shift that causes considerable merriment across the water. Our vast army with its 100,000 men, by



Page Ten

vast army with its 100,000 men, by actual count, might beable in a pinch to subdue a country like Mexico, but even that is doubtful as military men say it would take at least 25 years. What then, could our army do against any European army? Secretary Garrison has recommended that our standing army be recruited to its full war strength of 220,000 regulars and that immediate steps be taken to create a more adequate

reserve force. The urgent need of a larger, better navy, army and coast defense is obvious to any right-thinking man, but further measures are extremely important that efficiency be maintained. All young men should be given some training in military service, and patriotism should be more generally inculcated both as a part of school education and by patriotic societies which would keep alive the knowledge of the country's history and constantly bring to the front the spirit of American democracy.

There is a great deal to be done, and already some that is being done. The encampments at Plattsburgh, Fort Sheridan and other places are a step in the right direction. Special military training is being given in some of our high schools and colleges and the whole subject of national defense is being beneficially agitated by the Editor of Drill Chips and other very prominent men. Publicity is what the issue needs, because in the past our isolation and comparative smallness of foreign intercourse have kept consideration of defensive measures in the background. Several organized societies such as the Navy League, the Security League and the Grand Army have done much explicit work in promulgating discussion and interest in the subject. In addition to this the President and his cabinet officers seem finally to be resolved on efforts for better defense, and the general awakening of the people guarantees that Congress will be compelled to act as soon as it next convenes.

In conclusion, we must remember that the security of a nation depends on its ability to defend itself and that eternal vigilance is the price that

must be paid in order to obtain the desirable things of life and defend them. As a world power, our position has become that of other world powers and we must be able to hold our own in war as well as in peace. Moreover, whether we will or not, we are almost certain to be placed on the defensive, and if we would maintain peace with other nations we must show all would-be belligerents that we are prepared for war.

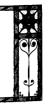


Page Eleven

H, S. Black-



TWIST DRILL DESIGN



In the August number of that estimable journal, "Machinery," we find a bit of philosophic reflection on the subject of twist drill design which we quote in full:

"The lead of the flute, the lip angle and the angle of the point of twist drills have remained practically unchanged for the last forty or fifty years. But a new development has recently been made by a twist drill maker in changing the angle of lead of the flute. Several advantages are claimed for the new type of drill, but the fact that the present form has been accepted for so many years prompts some conservative users to ask the reason for the change.

"Is there any assurance, based upon practical tests, carried out with scientific precision, that twist drills are made of a form most advantageous for the rapid removal of metal? Why should the point angle be 59 degrees? Why is a lead angle of 20 or 25 or 35 degrees superior or inferior to some other angle? What thickness of web is most advantageous to strike a favorable balance between cutting quality and strength? What increase in the thickness of web toward the shank is justifiable in order to insure reasonable strength?

"Because twist drills have been made in a certain way for the past few decades, is no reason why this way is the right way. Where is the investigator who can answer the questions propounded for the benefit of the practical efficiency expert? Do we now use 25 per cent or any per cent more power than would be necessary to remove the same amount of metal by a drill if it were differently designed?

"There is an awakening to the fact that established methods are not necessarily the best or the right methods, simply because they are established. The methods in all walks of human activity were never so severely questioned as today, and not the least in engineering and machine shop practice."

Even ye guileless Ed. hazards a guess that a mechanically trained mind will detect nestling in these harmless-looking paragraphs some neat and

Page Twelve

Caagla

knotty questions. But let us see what Professor Peck has to say in "Machiner for September:

"We have read with much interest the editorial entitled 'Twist Drill I sign' in the August number of 'Machinery.' The implication seems to that the business of manufacturing twist drills has been, until very recently, 'rule-of-thumb' affair in which a certain design has happened to becon standard because each new arrival in the field has blindly accepted the tractions of his predecessors. This state of affairs is now somewhat altered, however, by the fact that 'a new development has recently been made by a twi drill maker in changing the angle of lead of the flute.'

"We are inclined to think it will be interesting news to the majority of twi drill manufacturers to learn that there has heretofore existed a standard d sign for such tools other than the separate standards of individual maker As to the matter of the angle of spiral, let me quote from a little bookle 'Twist Drills—Their Uses and Abuses,' first published by the Clevelan Twist Drill Co. some fifteen years ago:

"'There are various shapes of flute and angles of spiral on the drills made b different manufacturers, the shapes of flute varying by only a small amount, whil the angles of spiral range from 18 to 35 degrees. Theoretically, the finer th pitch of the spiral grooves, or the greater the angle of spiral to the axis, th easier it should be to sever and bend or curl the chip; but there are practica considerations which counteract the advantage of mere ease in severing chips and it becomes advisable to make this angle somewhat more acute than would other wise be the case. Among the practical objections to a very fine pitch of spira may be mentioned the weakness of the cutting edge and its inability to carry off the heat generated. Such a groove also packs up with chips more readily From a large number of tests we have found that angles of spiral ranging from 25 to 30 degrees give the best results in drills for average work—i. e., where the holes are between one and three diameters deep. For deeper holes than this, a coarser pitch (with less angle to the axis) might be desirable, and for shallower holes, a finer one.'

"The recognition of the value of various angles of spiral for various purposes is, therefore, not new, and twist drills differing considerably with respect to this angle have been on the market for a number of years.



"The editorial asks the question: 'Is there any assurance based upon practical ests carried out with scientific precision, that twist drills are made of a form nost advantageous for the rapid removal of metal?" In our judgment the nswer to this question hinges largely on the meaning of the words 'scientific recision.' We do know, however, of several lengthy tests that were made on carefully prepared apparatus by expert workmen, to determine the very points a question. (A description of this apparatus appeared in the American Machinist, May 30, 1901, and will also be found, together with a review of the ests, in the booklet 'Twist Drills—Their Uses and Abuses.') The result was that one manufacturer expended large sums of money (1) to change the angle of piral on the bulk of his product from within the range between 33 and 35 decrees to within that of 25 to $27\frac{1}{2}$ degrees, and (2) to procure an entirely new quipment of cutters to produce a shape of flute which should, while consuming practically no more power, free itself of chips more readily. We also know that

"We quite agree that because a thing has been made a certain way for a long ime it does not follow that it is the best way, and we do not believe that one ngle of spiral or of point could be found that would be best for all kinds of work. There are too many varying conditions, some of which require the acrifice of a certain amount of power to accomplish the work at all.

"We question, however, if any data sheets which attempted to cover these points would be of much practical value to efficiency engineers, unless the whole experience of a drill maker went with them. The makers of twist drills sell holes' these days as the criterion of value of their products and it strikes us hat the shortest and most direct road to drilling efficiency is for the man that has a difficult drilling problem to put it up in detail to several of the leading wist drill manufacturers and let them furnish samples that in their judgment are best suited for the work. If these are then run under the condition recommended by each manufacturer the user can readily select the tools that show the nighest productive capacity in the job. In our judgment the twist drill manufacturers will be glad to submit their product to such competitive conditions,

demonstrated to be such.

Cleveland, Ohio

The Cleveland Twist Drill Co."

and would welcome any improvement in design that might be thus scientifically

"And," as Troilus feelingly observed to Cressida, "there you are."

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C. T. D. IMMORTALS

N this page you will find a phote reproduction of one Harley G. the third entry in the gallery of the less. We admit, without undue pressuall of our men possess beauty in one of its divers forms; however, we point witto the nice, smooth, open features worn Smith and hereby proclaim their dizzy supover any other features appearing on the

But—in order that no one may be d by Sir Harley's artless and innocent count let it be recorded that he is rounding seventeenth year in Cleveland Twist Drill most of that time having been spent around Pittsburgh. From this you ma your own inferences on the margin to the we cannot publish ours.

There seems to be something about the twist drill business that drives its do to the alleged simple life of farming. At any rate this sad fate has ove Harley G. and several others of the "Cleveland" shrine. We presume that far a necessary evil and that some one must run them. But the one big mystery young life is why a man will spend six days brushing the farm off his person caressing the welts of the man-eating mosquitoes, and then on the seventh, back to get more. Truly, the riddle of human nature passeth all understa

It is reported on good authority that when Mr. Smith first went out cold, stormy road he was so modest that he would call on a buyer and the fuse to tell anything about himself or why he had come. This, being some of a departure from regular selling methods, excited some curiosity. But or he accidentally let slip something about twist drills and his secret was out. Since he has so far controlled a natural diffidence that he can walk right into an unsuing shop and demand a large contract calling for \$6.00 worth of tools—and

This proves that if the meek shall inherit the earth, they shall likewise a once, prepare by superior force of arms to retain it.



THE PARAGON DRILL



NCREASED hole production is assured by the use of "Paragon" High Speed Drills. These drills are hot-forged without weld or joint.

are hot-forged, without weld or joint, in special dies from the original flat bar. The flutes are scientifically shaped, with straight cutting lips and the maximum chip area. ¶As the strain of driving is brought, by our specially designed "Paragon" sockets, to the large end of the shank where it has the greatest cross-sectional area, the "Paragon" Drill has an exceptionally strong and durable drive. ¶The world's drilling record (57½ inches per minute thru cast iron) is held by a ½ inch Paragon Drill.



THE CLEVELAND TWIST DRILL CO.
CLEVELAND

CHICAGO: 9 NORTH JEFFERSON ST.

NEW YORK: 30 READE ST.

He came up smiling—used to say,
He made his fortune that a-way.
He had hard luck a-plenty, too,
But settled down and fought her
through,
And every time he got a jolt
He just took on a tighter holt,
Slipped back some when he tried to
climb,
But came up smiling every time.
—J. W. Foley



OR NOVEMB



THE man who is most to be wanted for positions of trust is the one who does not work for mere selfish gain, but for the love of the task. If he does his work for love of it, and not out of consideration alone for the result, he will serve his own interests best, for he will do his work well and thereby make himself indispensable to his employer; and when the time comes to choose a man for a higher position the choice will likely fall upon him who has done his work well.

-William Howard Taft



Andrew E. Coburn, Editor

ELL"! The Princess—for, indeed, it was she-entered the death chamber as she spoke. She had taken no previous part in the conversation on that fateful night—due in some measure, perhaps, to the fact that she had been absent—but now, thoroughly aroused, the fire gleamed in her beautiful eyes, and rising in regal splendor she delivered her judgment. The strained, malignant faces, grouped around the dying embers, revealed the villainy on foot. The silence was tense; it was intense; nay, more, it was past tense. You could have heard a belaying-pin were it dropped to the floor.

Dear reader, I know not what else the Princess said. Would that I did, for I too have strange yearnings for princesses—I am sorry, but I was not there and I never heard. But I have somewhere read that interest and attention should be aroused, seized and handcuffed in the opening paragraph and I am only following instructions in my own quaint way.

Now that I have your attention—may hap even your sympathy—I will proceed with the sad, sad tale.

I have been reading a book.

Aside from magazines and news-so-tospeak-papers, books are about the only things I read. I relate this, in a burst of trusting intimacy, earnestly hoping you will respect the confidence. Ordinarily I I do not readily disclose my private affairs, but a clear understanding in the first place saves nine stitches or something in the second place. At least, so I have been told. What with the ascendancy of the Chambers-McGrath school of writers, these are the lean years for books, but in order that one may not be regarded as an enemy of Literature, he must read something—though it be nothing more of a literary achievement than a telephone or city directory. So, I have been reading a book.

This book airs the disinfected opinions of a number of gentlemen prominent in various phases of advertising activity. These opinions, you may be thinking, concern The Twilight Sleep of R. Van Winkle or The Milky Way and Its Percentage of Butter Fat, but they do not. A singular circumstance, for which no plural has yet been discovered, is that they pertain to such forms of direct advertising as this little magazine you are so intently reading. Some of the august Augusts referred to are deliberately unfriendly in

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H. S. Taper Shank

their ultimatums, several going so far as to say that booklets of this sort cannot be successful, cannot be read with interest, cannot be productive of results, cannot and so forth to the bitter end—unless they devote themselves exclusively to the piece de resistance, which in this case, as you may have suspected, is Cleveland drills and reamers.

I am overcome with sadness. I am distraught with grief. For here I thought we were getting on famously. And all those fine letters you wrote us—you didn't mean what you said? It is hard to think so, but Drill Chips wasn't really successful because we did at times get off the subject of twist drills. We chatted about this thing and that thing, trying to convince each other that we were human and had human interests even before we made, and you bought, twist drills. We discussed good naturedly, lots of topics, on none of which we were authority and on many of which we were probably wrong. We had almost convinced each other that we had a mind, a heart and, perhaps, a soul. You were casting aside your suspicions and were lending your moral support. Your warm and appreciative letters proved it. While I—

I was going to night school to learn to be a pote—and when I got my card in the potes' union, I was going to sing you a lay of the sunny twist drill busi-





Learning to be a pole

ness. More—I had already given you two of my French phrases and from time to time I was going to demonstrate the other two for the benefit of those of our readers who wished to be-

come proficient in the langwidge.

But, you see, it was all a mistake. I didn't hew to the line of greatest resistance. And when you wrote me those letters of encouragement, your hewing was equally bad. You often got to gossiping about things entirely apart from your business and ours, and that was wrong, terribly wrong. If perhaps you ordered a carload of drills in the next mail, that did not mitigate your offense. Because, as you will agree, if you and I do not eat, sleep, live, dream and wholly exist for, by and on account of twist drills, then, forsooth, we are headed for oblivion's mighty bourne. This is the cold, nude truth, fellow dawdlers, for the Moving Finger has writ, and writ it in a book. Therefore I trow, or would like to trow, anything fairly solid—a billiard table or a piano will do, thank you.

In view of these things I resolved that this month's lesson should snuggle up close to the Grand Theme. You know what I mean—twist drills. I have long since taken the vows of chastity and obedience, to say nothing of other pledges, and now I solemnly promise that this book shall have nothing in it but business, our

business. So far I have said not a word on anything else, and s'help me, I will not.

Experience is a thorough teacher—albeit, sometimes a costly one. This thought just occurs to me, without



Experience is a thorough teacher

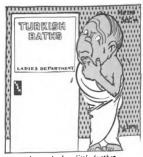
any good reason and I am convinced that it is true, pure and wholly hygienic despite the fact that it is not exactly original with me. I reflect further that the errors of yesterday are the pilot lights on the highway of today, and he who lives to learn likewise learns to live. Do you not think so?

Experience has exposed many fallacies including that ancient one of buying on a price basis. With sadness we see those who blindly plunge on, firm in a fond belief that by some perversion of justice and equity, they can get more than they pay for. It is strange; ay, passing strange. I know some people who won't buy anything at what they regard as a low price, on the theory that it can't be any good if it costs little. Then there are others, and their name is legion, who refuse to buy because they arbitrarily and without reason believe the price too high. Methinks both docrines are 1/2 baked or 1 sided; as one sided as the Colonel using both hands to kill a grizzly. The ruth, and long may she wave, is that while ocasionally a real bargain looms up like a rift in he loot, the rule is that value determines price nd we, even you and I, cannot buy below actual orth.



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Since we have gone this far let us look a little further. When I speak of value I mean not an intangible something that flits thither and you like the fretful butterfly—or is it the fretful porcupine? (Often have I wondered why the little porcupine



-let us look a little further

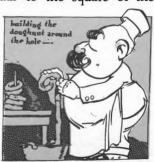
is so fretful, whether his soul was torn by some eugenic problem, or whether it was his needle-imbedded hide that caused his suffering—I do not know, but it is an interesting study.) Value, my friends, is measured by service, performance, accomplishment. The whole fabric of business is the science of service and no man is great save as he has learned to serve. By the same token, a man is successful in the same degree that he is serviceable. Let him cease to serve his patrons, his community, his fellow men and his value is lost. He becomes worthless. Service, then, is the underlying essential oil of value and success. But let us leave the abstract to its fate and take up the reinforced concrete.

A drill or a reamer should be judged by what it does. Its value should be gauged by the service it renders, the work it performs. In other words, holes. A drill is for one purpose only. It does not live a frothy life of idleness and ease. It does not dissipate its youth and energy in aimless pursuits of pleasure. Its sole reason for being is to make holes; to make holes where there were no holes and then to make two holes grow where before there was only one. Its whole existence centers around the business of making holes. You may have a notion that this is all quite

well enough but that there is no need of getting too fervid over a little thing like a drill. Well, a drill is a little thing, even a big drill is a little thing, but the drilling problem—the hole-making proposition is a big thing, a very big thing. And not only to us, but to you. Do you know that drills and their product, holes, are absolutely indispensable to your comfort and convenience, if not to your actual life? Do you get the significance of that? Without holes, where and how would we get watches, street cars, automobiles, trains, ships, steam engines, printing presses and machinery for the creation of everything that clothes your body? I repeat: how would we get them? I see you are at a loss to reply, so I will tell you—we wouldn't get them at all! Long ago I learned the true state of affairs and I came to realize the vast importance of drills and holes to a proper, orderly existence. I now impart these facts to you and I hope that you will find the comfort, that I have found, in the possession of this knowledge. Moreover, I hope if I may, that this true understanding of things will stand by you, as it has stood by me in the big crises of my life.

In years gone hence, I underwent the throes of learning that the sum of the squares of the two sides of a right angle triangle was equal to the square of the

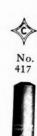
hypotenuse. This didn't seem to me at that time, I distinctly recall, to be of sufficient importance to warrant the combined anguish of all parties engaged in the transaction. And in all the years since I was let in on that secret I haven't changed my mind. I have yearned for



-and holes for doughnuts

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H. S. Straight Shank Drill

"CLEVE

THERE is nothing more or less in "Cleveland" advertising than there is in "Cleveland" tools. Without exaggeration; without a wide-sweeping array of superlatives; without flossy generalities, our aim is to hew to the line with simple, but important, facts. "Cleveland" tools are not a panacea for all mechanical ills, and we have never advertised them as such.

For forty-one years we have been making tools that we are proud to trade-mark and brand with our name. The tools have given value to the name and the name, in turn, has gone forth as a guarantee of the tools. The message of sterling worth, of inbuilt

THE CLEVELAND

CHICAGO, No. 9 North Jefferson St.

CLEV

LAND"

character, of exceeding cost-per-hole value, of dependability, of reputation staked on a product—this is the only message we have to convey. And we like to do it without the diverting influence of verbal fireworks, without a "punch", ay, without even a kick or a bite. Because the white light of simple truth is sufficient unto itself.

Any drill or reamer, bearing the "Cleveland" name and trade-mark, is a good drill or reamer. It represents the skill and knowledge gained in many years of research and experience. And upon its ability to produce or finish a greater number of holes, per dollar of investment, our very existence depends.

TWIST DRILL CO.

AND

NEW YORK, No. 30 Reade St.



No. 426



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many things—I have longed, and longed in vain, for countless things that were out of my reach and power. Yet I have never desired, and I confess it without shame, to find out about this triangle tale, even though I felt in my heart that it was a malicious falsehood foisted off on unsuspecting youth. It just simply isn't in my soul to care a fig about it and consequently here I am, loaded with great geometric erudition about which I am stolidly indifferent. Now if they had told me, instead, about holes and their importance in this worldly scheme, see how much further I would be ahead. So I am now telling you in the hope and belief that you and yours can be saved from a wretched system that takes no account of the eternal fitness of things.

Do you remember, Sweet Alice Ben Bolt, some time ago when we first threw back the curtain and expounded the hole theory? We told you that you wanted holes—not drills. We said that hole production determined the worth of a drill; that a good drill would justify itself by making a greater number of holes both between grindings and during the life of the drill itself; that a man could spend more time making holes than he did at the grindstone putting on new points and cutting edges. We told you all this and more. We told you there was a reason back of it all—that one drill didn't accidentally or without cause produce more holes than another drill. We explained the processes—the correct chemical composition of the steel in the first place, and the subsequent scien-



the throes of annexing geometric wisdom

tific precision of manufacturing operations such as milling, tempering, hardening—all of which were responsible for the results obtained. We related this all with great joy. We thought you should know and anyhow we had no reason for keeping it secret. There is no sense in hiding your light under a bushel basket, nor even a half bushel basket. The promotion of our business depends

on the service we can render you and so we took great pleasure in telling you how to discriminate, how to judge and select the best. Well, it was a great success, our little idea, and the force and logic of it so appealed to other manufacturers of drills and reamers and taps that they took it up bodily in a general united effort to educate the buyer and user of those tools. That is the final test. When other concerns in the same those tools. That is the final test. When other concerns in the same line, endorse your ideas and adopt them as they would an orphan heiress, that shows they are good ideas and that there exists a solicitous regard for the welfare of the buyer, especially if he is showing signs of uneasiness. Moreover it proves what we said in a recent issue of this Immortal Work—that Co-operation is a Divine Injunction and the mightiest mandate that God ever sent thundering through this universe. A number of our good friends must have felt the Cosmic Urge yodeling to them to co-operate and accordingly swung themselves in line with the motif of our advertising. Thus we see that grief is not all grief and that in man's darkest hour hope bears him up, and through the break in the clouds he sees a widow. clouds he sees a widow.

I do not wish to be a sceptic, but I do believe that the mighty force of tradition has done more to strangle initiative than any other one thing. Because a certain thing has always been done in a certain way, is too often accepted as a powerful reason why it should continue to be done that way. It has always seemed to me that changing conditions and new circumstances should influence or even determine the methods to be

pursued. Frequently they do, of course, but more than likely the adoption of a new plan means a lot of co-ordinated work and a united effort all along the line. And that, in turn, means overcoming a lot of inertia, the supply of which always seems to exceed the demand. Overthrowing any ingrained system demands a co-operative endeavor. One man trying to change the whole order of things would find it a thankless, if not a quite impossible task to sauthe least. quite impossible task, to say the least.



Spending more time at the grindstone than at the drill press

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For example—small drills are priced and sold by the dozen or the fraction of a dozen. It is inconvenient and means a great deal of useless work for every one concerned. The custom originated, no doubt, with the English by whose currency system twelve pence make one shilling. But in this country, where it is alleged we have 100 cents to the dollar, we still follow the fashion of pricing by the dozen. What more natural than to specify the quantities by a system corresponding to the prices quoted on those quantities? For instance, the ½" carbon drill No. 108 lists at \$8.00 per dozen. So, if a man orders five of them you divide by twelve and multiply by five and after you do this several hundred times a day on different sizes, prices and quantities you arrive at the proper net totals, providing you have not stripped your gears while making the detour. In the words of the blue-book you "leave brick, turning left on dirt road to trestle, and right through deep sand to fork. Continue up and down grade, cross r. r. and rocky river bed back to brick".

If these drills were priced, packed and sold by the hundred or fraction thereof, how much simpler it would be. Say they were listed at \$67.00 per hundred. One drill would cost 67 cents and ten would cost \$6.70. All at a glance, without any figuring whatever. If a man in great haste came in and wanted ten drills for a rush repair job, which was holding several hundred men in idleness, you would quickly say to yourself "six dollars and seventy cents", without pencilling your calculations all over the walls and furniture.



Waiting for a net cash price

Of course, if this same man wanted to pay real money for them instead of getting them on tick, you would hand him the morning paper and ask him to be seated while you deducted thirty, two tens, five, three and a half, two and one percent, went out and watered the horse and looked over your stock to find out if you had any. If the customer became unreasonably impatient, he could exercise the alternative of paying the list price and thus add his mite to the gayety of the day.

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OBERT FULTON was the designer of the first successful submarir Also he died in 1815 just on the 100th anniversary of this year of grac 1915, which sees the submarine in the heyday of its career. The shows that Fulton was a very thoughtful man. I am going to present a fe interesting notes on his life the reason for which appears later. In a gener way, I may introduce him as a man far-famed by reason of his notable successes attained in the mechanical world without the aid of "Cleveland" Dril and Reamers.

Fulton, born in Pennsylvania, earned his first money by painting miniatures but as business in that line was not booming in this country, he betook him self at an early age to London. There he tried his hand at portrait painting and his work must have been highly regarded as he exhibited before the French Royal Academy and the Royal Society of British Artists. Although he painted the pictures of a number of famous people, the income was insufficient, and he concluded to forego the artistic life and take up engineering.

In all Fulton's activities, he appears to have been spurred on by the hope of financial reward, almost to the exclusion of every other consideration. Even after having acquired distinction as an Engineer he traveled through England lecturing on social reform and preaching his political beliefs, probably for the purpose of increasing his income. He also wrote a treatise on canal construction and navigation from which he hoped to derive some profit.

Up to this point in his life, Fulton had created no great stir and in 1797 he left England for Paris. What had become of his funds isn't recorded, but he arrived in France according to his letters, with nothing more negotiable than a boundless optimism, accompanied by his characteristic energy. At that time Napoleon was trying to "kulturize" the rest of the globe and Fulton turned his attention to the submarine as a possible means of wiping out the British navy which was a constant menace to France.

In 1800, Fulton's "Nautilus" was launched on the Seine near Paris. This was the first practical and successful submarine. It was 20 feet long, 6 feet in diameter, propelled by sail while on the surface and by a series of hand levers, gears and a screw propeller while under water. Fulton probably realized that it is a poor submarine that won't go up as well as down, so he arranged these movements by water ballast compartments fitted with force pumps. The

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acking apparatus was to consist of a torpedo which was merely an egg-shaped rrel containing 100 pounds of powder and furnished in front with a gun-lock, trigger of which was to be pulled off by a lanyard. For the purpose of using and firing the torpedo the following arrangement was devised. Through conning-tower of the "Nautilus" there was a shaft, the outer and upper end which terminated in a screw eye. Through the eye passed a tow rope attached the torpedo from a small winch inside. The boat was to be steered under ew blows on the lower end of the shaft. The "Nautilus" was then set off, ving the screw eye behind, until the tow rope brought the torpedo in contact th the ship's bottom.

The "Nautilus" manned by Fulton and two friends sank an enemy ship in the rbor of Brest but failed in two subsequent efforts due to the English being ewarned. Having proved the utility of his boat, he now proceeded to draw a contract which he presented to the French Government. It was a unique cument. By the terms of it, Fulton was to be paid a stipulated amount for try British ship he sunk or captured, this amount to vary according to the mber and size of the gups she carried. "and in any case sunk or captured. mber and size of the guns she carried—"and in any case, sunk or captured, enemy boat with everything on her is to become the personal property of bert Fulton, American Citizen". In return France would be permitted to nstruct other and like boats upon the payment of 100,000 livres each, to Robert lton, American Citizen. France accepted the terms and things were looking itty rosy for Robert, but at this point the Minister of Marine resigned and successor would have nothing to do with "an infamous scheme fit only for ates and sailors without honor or morals". Although he had spent three years perfecting his boat and demonstrating its possibilities his plans were thus ested just when he was about to reap his reward. The French really feared that English would regard the boat as a violation of "civilized warfare" and would it dire punishment on the great number of French prisoners which they then held. While Fulton had no reason to be highly pleased with the turn his affairs I taken, he was not at all discouraged. Without further scruple or thought the devotion he had professed for the cause of France, he prepared to depart England and lay his offer before the British Admiralty. The French must

have known of his plans because while he himself reached England in sat Nautilus was destroyed before he could get it out of France.

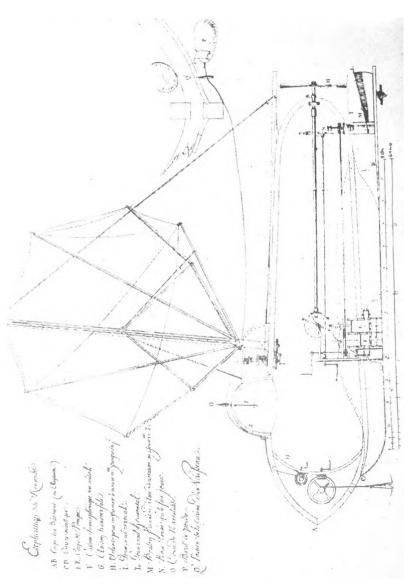
The British, although they likewise thought it was not quite "playing the gave Fulton considerable encouragement and some funds. For them he and perfected the "catamaran", a sort of floating mine that was to be attace a ship's side under cover of darkness and exploded later by clock-work. the submarine itself, the curious reasoning of the British authorities was the pressed: "If we adopted the plan and it succeeded against the French flotil ingenuity of the French engineers would be exerted; they would soon get poss of the engines with the mode of using them, and the invention would reconstitute the destruction of her marine". Moreover they predicted that submarine came into general use, they could not get enough sailors to man the ships and those they did get would go down to an inevitable and ungallant.

France and England were simply troubled with cold feet on a proposition had proved its merits, but the malady must have been more or less universal, be when Fulton saw what he was up against he came back to the United States, when was accorded a similarly indifferent reception. It was then that he gave usubmarine idea and devoted his energy to the art of propelling vessels by meathe steam engine invented some years before by his friend, Watt. In 1807 he the "Clermont", the first steamboat, and in 1814 he constructed the U.S.S. "Ful a warship of 38 tons and the first one to be driven by steam power. The folloyear, 1815, he died.

Fulton was a tireless worker, versatile and gifted with rare inventive genius. made and patented many improvements on spinning machines; he painted the panorama; he invented the screw propeller and wrote a dozen or more books on a nical subjects. He encountered endless obstacles, ridicule, distrust and lack of fi but he always came up smiling—and in his life, perhaps, there lies a lesson.

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Now, for the point of all this. Since the submarine has become so fashiona we have engaged a regular artist to make a painting of the first practical model its designer, Robert Fulton. All this, done with much care and a studious reg for historical accuracy, is to be reproduced on our 1916 calendar. All requests fi in the order of their receipt. Speak early and avoid the congestion.



FULTON'S SUBMARINE, "NAUTILUS", 1801 From the original drawing in the Archives Nationales, Paris

THE PRITTON PRINTING CO CLEVELAND

WHAT DOES IT MATTER?

It matters little where I was born,
Or if my parents were rich or poor;
Whether they shrunk at the cold world's scorn,
Or walked in the pride of wealth secure.
But whether I live an honest man
And hold my integrity firm in my clutch
I tell you, brother, as plain as I can,
It matters much.

It matters little how long I stay
In a world of sorrow, sin, and care;
Whether in youth I am called away
Or live till my bones and pate are bare.
But whether I do the best I can
To soften the weight of Adversity's touch
On the faded cheek of my fellow man,
It matters much.

-Noah Barker



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DISTENSIBILITY



FOR DECEMBE

I do the very best I know how—
the very best I can do; and I mean
to keep doing so until the end. If
the end brings me out all right, what
is said against me won't amount to
anything. If the end brings me out
wrong, ten angels swearing I was
right would make no difference.

-Abraham Lincoln.



Andrew E. Coburn, Editor

O the many readers of Drill Chips; our customers and the other good people who are not our customers: We are nearing the end of an unusual year—a year that in our business, at least, opened with the worst depression we have known and closes with an unprecedented fury of activity. Either of these extreme conditions is, naturally, little to our liking and when both are compressed into the short space of less than one year, the result for all concerned is bound to be disconcerting, to say the least.

The Cleveland Twist Drill Company has had no war orders and wants none. "Cleveland" tools have been distributed through the regular channels to the same people, or class of people, who have bought in years gone by. The fact that most of these friends of ours needed a far greater quantity of our product than they have used in the past, has placed before us problems that can only be slowly and gradually disposed of. So, if we have at times been unable

to cope with extraordinary demands, we ask and hope that our customers will remember that we, too, have been sorely beset.

In the midst of the petty annoyances that all of us have to contend with, let us not lose sight of the very great deal we have to be thankful for. All roads lead to human happiness which is the chief end of man. And while we greatly desire a saner and more soundly prosperous New Year, we must never for a moment doubt that the close of this Greatest Tragedy will bring for all the world a more stable peace and far happier times than have been known for generations. "The mills of the gods grind slowly, but they grind exceeding small."

GOVERNMENT OWNERSHIP

ANY arguments, statistics, and instances have been cited to demonstrate that government ownership of public utilities would be a step backward. Indeed, we have a "horrible" example or two at hand to support the claim. For instance, we needn't look any further than our own United States Post Office Department—by the operation of which, fewer than 30,000 publishers receive a subsidy of more than \$80,000,000.000 per year at the expense of the 90,000,000 users of letter postage—for a plaring illustration of govern-

ment mismanagement and inefficiency. There is no reason to pre-suppose a success in railroad or other activities, where only colossal failure has crowned other attempts.

One objection to government ownership of public utilities is that office-holders as a class do not render as good service and are not as considerate as are those employed by private individuals or corporations. In England the people are exasperated by the poor service and the impudence of the telephone operators, which has grown unbearable since the government took over the telephone system. We see the same thing in this country, though American public servants are perhaps less haughty and more accommodating than those of England and Germany.

With us there is no set rule of conduct and the result is that those public servants who are true ladies and gentlemen render good service and are well liked; but the boors are not checked by their superiors and they are altogether too numerous. possible to discharge a civil service employe for boorishness, yet he may injure the service and render it unpopular to a degree beyond the comprehension of the office-holding class. No private employer would permit his salespeople to be impertinent to customers or to refuse to show goods, but the man that the people employ and pay often assumes the right to browbeat his employers. There are still mightier objections to public ownership but this is one that the public grasps readily.



H. S. Taper Shank

CHRISTMAS SUGGESTION

OME people practice loving kindness and Christian benevolence on December twenty-fifth, ignoring all other days of the year. This, although it smacks of hypocrisy, is probably better than never setting aside a day to let the sunshine into one's soul. If the Christmas spirit were evenly distributed over the whole year, one evil would be overcome and that is the useless, foolish and wasteful giving. The passionate pink suspenders would cease to flourish, the disorderly cravats would pine away and perish, while the Cabbaggio Perfectos would fulfill their rightful function as petty election offenses.

The habit of indiscriminate Christmas shopping, bad or very bad as it may be, is too firmly intrenched for us to overthrow. The best we can do is to suggest something useful and wholly worth while. To get a definite idea of what we mean, refer to the illustrations on

pages eight and nine.

We can supply a set of drills or reamers for every special need. We have sets for the home, for the garage, for the toolmaker, the general mechanic, the jeweler; in fact, a set for every purpose and for every man who ever has occasion to use drills or reamers.

Whether you do your shopping early or late, do it wisely. Again, if we may, we suggest that set of tools. Think it over.



COMPETITION VS. CO-OPERATION

O you remember all the weeping and wailing and gnashing of teeth because of the combination of interests in large industries? Do you remember how the notoriety seekers, the dilettante reformers, the agitators and the anarchists came out on the starred and striped rostrums and proclaimed in heavy browed solemnity that the trusts were running the country, that capital had conquered democracy, that "big business" was putting the land of our fathers on the eternal fritz? And do you remember how the higgling horde drew their righteous robes about them and offered up mighty resolutions to bust the trust; to dissolve any business that was big, and to raise blue Ned in general?

You remember all this. So do all of us. We've never had a chance to forget it, because the business wreckers went to work, got the power, authority and encouragement and did their work Just how well, in one particular case, is shown by the commissioner of corporations in his report on the tobacco industry. The American Tobacco Company was dissolved in 1911 by supreme court decree and the business was divided among seven successor companies, who were to compete one with another, until their advertising, selling, manufacturing and overhead expenses went up to the roof. This would bring down the cost of their products and let the ultimate consumer live happily ever after. Certainly, Guiseppe, for does not your copy-book say that competition is the life of trade?

Well, these seven companies went on competing merrily during 1912 and 1913. The buyer of



H. S. Three luted

tobacco goods profited not one whit by this competition because there were no price-cutting jubilees or price reductions of any sort. On the other hand: "there was an increase in the volume of the business of the competitive companies but their ratio of selling expense to sales was twice as large in 1913 as in 1910". In other words, the combination expended in 1910 about 11 millions of dollars to sell its products, while in 1913 the dissolved companies spent 23½ millions to do about the same or slightly larger amount of business. As a consequence of this competition, the rate of profit of the successor companies has been reduced, although their rate of profit is still high. In general, the competition has seriously reduced the profits of the other independent companies.

The commissioner concludes his report in this manner: "The reduction in profits has not been caused by increased cost of manufacture, but by increased expenses of distribution, and principally by the increase in expenditures for advertising. As the sale of tobacco products depends largely on the advertisement of brands, competition in the tobacco business necessarily increases advertising expenditure. In other words, for tobacco products, and it may be true also for other brand articles, the social cost of the system of competition is largely found in extraordinary advertising expense, and this would seem to be inevitable for the brand articles so long as they have a proprietary character."

The net result of the dissolution of the American Tobacco Company appears to be diminished profits for every one in the tobacco business; millions of dollars gone to absolute waste, and no one benefitted in the slightest degree. If our government shows such keen comprehension and such able adminis-

tration in the regulation of so called monopolies, what efficiency may it not attain in owning and operating all public utilities?

HIGH-SPEED DRILLS

N these strenuous days, when the demand for high speed steel seems to exceed the visible supply, many users overlook the fact that carbon steel can very often be used with as satisfactory results as high speed steel.

There are certain metals, the drilling or machining of which calls for high speed steel tools. And for all metals, high speed steel will enable the operator to greatly increase his output, provided his machine is driven up to the recommended and proper speed. From our own investigation, however, we know there are many shops using high speed tools, and at the same time running their machinery at comparatively low speeds. High speed tools, of themselves, do not increase production. They merely make a greater output possible, always dependent on the augmented speed of the lathe or drill press to increase the volume of finished product.

The high speed steel situation is unsettled and uncertain and it will continue to be so until after the war is over. High speed steel is harder to get than ever before and it is possible that the supply will be shut off entirely, regardless of prices offered. We can not tell what will develop. But, in view of the present outlook, we suggest that our customers use carbon, instead of high speed tools, whenever their ends can be successfully served by so doing, and that they provide facilities for annealing all material that would otherwise be so hard as to require the use of high speed tools.





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POST OFFICE PENS AND THINGS

AVE you ever wrestled with the rusted, corroded, barnacle encrusted, rheumatic jointed pen furnished by the Post Office Department for use by its patrons?

We tried it the other day, having absent-mindedly left our Waterman at the office. Talk about your Spanish Inquisition. We can imagine no torture more exquisite than to be compelled to perform with a pen that outlived its usefulness long before the Post Office inflicted it on a long suffering public.

Grasping the instrument firmly in our writing hand, we dipped it into the fluid that makes millions think. What the Post Office pen makes millions think and what it made us think, almost out loud, as we tried to steer it, Spencerianlike, over the paper, would not, if recorded, get past the censor of this highly respectable publication.

It sputtered and stuttered on every letter, spattered ink everywhere except where it would do the most good, balked when we

wanted to start and skidded when we wanted to stop.

We finally executed our fell purpose of addressing an envelope but the result was a cross between a Chinese laundry check and a cubist sketch of the footprint of an intoxicated centipede—with an eclipse of the sun in the back ground.

There is an instance of a young man who used a Post Office pen to write a letter to his fiancee. She promptly broke the engagement, because she maintained that his chirography not only revealed a low degree of culture but also bore positive evidence of a vicious and highly erratic character.

Tradition also has it that a certain business man who tried to sign a check with a Post Office pen narrowly escaped arrest for forgery. The signature was so unrecognizably unlike his that the teller paid the check out of another account on which he thought it was drawn.

One of our ambitions when a boy in a small town with a third class Post Office was to move to a big city where one could go

into a Post Office equipped with honest-to-goodness pens capable of fulfilling their mission in life.

When finally we entered the spacious marble corridors of the city Post Office and approached one of the writing desks, what was our surprise and disappointment to find there the same pen that had

graced—or rather, disgraced—the desk of the Post Office back home. At least if it was not the same pen, it was so near like it that it never could have proved an alibi.

Since then we have had occasion to visit the Post Offices in other cities, large and small. In every case the pen was such as to defy the efforts of the most skillful and persistent to produce marks with it that could be deciphered by any one but a high priced handwriting expert.

This thing fascinated us. We made investigations but never could we find a man anywhere who had ever found even a fairly usable Post Office pen. Neither could evidence be located that anywhere new pens were ever substituted for the old.

The mystery that bothers us is, where does the Post Office Department secure its supply of senile and decrepit pens?

Have they been handed down from generation to generation since

the Post Office Department was first organized?

Or, has the Post Office Department a secret source of supply somewhere where superannuated pens are retired from active and faithful service in other fields?

Or, is there somewhere a manufacturer, subsidized by the government, who artificially produces pens with the proper degree of antiquity like the producers of old masters who wax fat and prosperous on the newly rich?

Sometimes in our reflections on this perplexing problem, we have a vision of the day when the Post Office Department will catch the spirit of the times for ever increasing improvement of service to the public.

In that day the old pen will be relegated to the scrap heap. In its place we will find gracious and efficient stenographers stationed in the corridors ready to do our bidding, whether it's simply to address a postal card or write home for money.

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Blackmiths' Drill

As we lose ourselves further in this beautiful dream, we see the plan financing itself, in part at least, by insuring against a great deal of the loss of time and extra labor caused by illegibly and incorrectly addressed mail.

But getting back to earth, the thought strikes us that whether it's pens or twist drills, the use of poor tools is an economic waste that is almost a

tragedy.

This is true not only because good tools do better work, but practically because they put the workman in better frame of mind so that he will have pleasure in turning out his work.

Putting a man in tune with his job is largely a matter of furnishing

the proper equipment and conditions.

The man who quarrels with his tools is not a good workman because

his physical and mental energy is expended in the wrong direction.

The good batter does not think of his bat, whether it is long enough and strong enough, nor whether the muscles of his arm and shoulder will work quickly and accurately. He keeps his eye on the ball and his mind on the direction he wants the ball to go.

The expert motorist does not need to think of the proper levers to operate in an emergency. He thinks only that he must stop quickly.

Hands and feet obey subconsciously.

So with tools. They should perform their functions so well that their operation is practically automatic. The operator should be free to think only of the results he wishes to achieve.

Every skilled workman has a certain rhythm with which he performs his daily task. This rhythm, because largely unconscious and automatic,

makes his work not only easier but also more accurate.

Disturb this rhythm by compelling him to use poor tools, so that he must consciously direct his motions and you will lower the quality and quantity of his work.

It's really no compliment to the Post Office pen that it makes us think of drills. The point we have been coming to, in this roundabout way,

is this:

The less your drill press man needs to think of the drills and reamers he uses, and the more he can think of the holes he wants to produce, the more and the better holes he will make.

THE EIGHT-HOUR DAY

POWERFUL lot of loose thinking and talking has characterized the agitation for a universal eight-hour day. The fanciful claim is a forth that a workman can and will turn out as much in eight hour as he did in ten. In the first place, as Emerson said of all of us, "Mankir is as lazy as it dares to be". In the second place, even conceding that man greatly desires to accomplish ten hours' work in eight hours, the thir is physically impossible. Eighty per cent of manufacturing operations are a complished by machinery. These machine tools are now run just as fast a they can be with safety and it is their speed that measures the volume of the output. Reduce their hours of operation by twenty per cent and yo reduce the output by twenty per cent. There is no way around it and favorable or ambitious mental attitude on the part of the workman make not the slightest difference.

Now suppose that every man in the country should work eight hours and receive the present ten hours' pay. In what possible way could this benefi him? Twenty per cent reduction in hours means twenty per cent decrease in product. Taxes, interest, overhead cost, wages and all other expenses remain the same. They can't be cut a corresponding twenty per cent, or any other per cent. They are fixed. So, the inevitable result is that selling prices go up twenty per cent and we are in a precious sight worse condition than we were before, for while we have the same amount of money spent, its purchasing power has been materially reduced. Moreover, with the eighthour day in force, there is the same demand for all things that there was during the ten-hour day. But there are only eighty per cent of those things to satisfy that demand. Thus we see that the natural result of this condition alone, would be to increase prices in order to retard the demand to a point where it would equal the supply. The law of supply and demand works twenty-four hours a day every day in the year; all the socialistic claptrap and the unionized, subsidized, oratorical hokus-pokus effects it not one infinitesimal iota.

What we're all after are the things the dollar buys, not the dollar for itself. If an automobile costs a thousand dollars and you have the thousand

Coogle

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ou can buy one, but if an automobile cost one dollar and you haven't the

ollar, you walk.

Consider further the ridiculous assertion of the agitating gentry, who ould rather agitate than work, that an eight-hour day means plenty of bs to go around and that everybody will be busy. Just look a little beyond lat Utopian mirage. This country is in constant competition with other nuntries. Probably fifteen percent of our manufactured product goes road. That means that fifteen percent of our workmen depend on reign trade for their living. Now then, when this war is over we shall have fight for both our foreign and home markets with the impoverished labor of urope, which in normal times costs only one-half of what American labor costs and to this burden the additional load of a twenty percent increase in our costs and we will be unable to hold our foreign trade, thus throwing fifteen percent our working men out of employment.

To enforce, generally, an eight-hour day in these United States would be to y in the face of common sense. It would revolutionize social and industrial in and take us back to the conditions that existed fifty years ago. Aside from

rese considerations, the universal eight-hour day would be a good thing.

ON NEUTRALITY

Sign in a Cleveland club: "Don't talk war in these club rooms. We are autral. If you can't say anything good about the Germans, keep still."

A DRY STORY

An Irishman and a Scot went into a cafe to get a drink and the Irishman ad no money.

One reason why talk is so cheap is that so much of it is absolutely orthless.

C. T. D. IMMORTALS



VER to the left, la gentlemen, we have trait of the fourth in John C. Hogan, one of the dants of the well-known family of that name. Herr arrived in our midst in the s 1800 after a hard winter but been picking up nicely these years and now carries a go beam, commonly supposed 1 cate great endurance and to capacity, rather than speed. Ho we do not want to imply that is entirely stricken from the cations as we believe that he some neat footwork on dema

By arrangement with divining idence and our sales manager spends a great deal of his ti Detroit and other delightful su of Cleveland. Also he frequence "in all the silent manlingrief" to Toledo, Columbus Cincinnati which are in the commonwealth of Ohio. Thi

sobering thought and it goes to prove that the life of a traveling sale is not one continuous round of joyous abandon. When Will Shakespeare go first job on the road, hitting the English hamlets, he used to say to himself "are the uses of adversity," meaning, we presume, that a fatted order book coumultitude of hardships. And so say we all of us; the sale's the thing, may never grow less.

YOUR INVESTMENT



THE predominating purpose in all the departments of The Cleveland Twist Drill Company is to produce a drill or a reamer that will give the greatest possible return per dollar of investment.

By investment we mean the time of the man using the drill, the output of the drill press and the time consumed in other depart-

ments regrinding and repointing the drills.

A drill that holds its cutting qualities longer will drill more holes. It will require fewer grindings. It will enable the operator to concentrate his attention on hole output instead of changing worn drills for new ones or regrinding the old ones.

The things that count are the time of your men and the production of your

machines. The original cost of the drill is trifling in comparison.

There is a slight difference between the cost of "Cleveland" Drills and Reamers and the cost of the ordinary or average drills and reamers. There has to be, for "Cleveland" tools are built up to a standard rather than down to a level that would make a low price possible.

Your business demands the use of drills and reamers. Your business can best be served by such tools as will produce the greatest return per dollar of your

investment.

You should have a copy of our catalog.



THE CLEVELAND TWIST DRILL CO.

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NEW YORK: 30 Reade St.

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A rose to the living is more
Than sumptuous wreaths to the dead;
In filling love's infinite store,
A rose to the living is more,
If graciously given before
The hungering spirit is fled,—
A rose to the living is more
Than sumptuous wreaths to the dead.

-Nixon Waterman.



